The Builder.

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WATER, Water! is the cry everywhere in the metropolis just now; and a very important cry it is. It ought to be reiterated, as we said long and long ago, as loudly as if half London were on fire. Cleanliness ("next to Godliness," it has been long said, but not thought), health, public safety, morality, general progress, are all involved in it. Pure water, and plenty of it, must be had: the question yet to be solved is, "where from?" The Thames, at all events within certain distances, has been unfitted for the purpose,—in parts, indeed, where some of the present supply is obtained, it is pregnant with disease and death. What is to be done for the Thames is as yet unknown:—

"The river Rhine, it is well known,
Does wash the city of Cologne,
But tell me, nymphs, what power divine,
Shall henceforth wash this river Rhine!"

That some of the contaminating influences will be stopped one of these days we may suppose (or we must expect fearful consequences); but we are unable to believe, weighing all the evidence on the subject, that it can ever be made to afford, close to London, a healthful, economic, and sufficient supply. Twenty out of twenty-five schemes submitted to the Board of Health propose still to obtain the supplies either from the Thames itself (mostly from between Twickenham and Mapledurham) or its tributaries; but the officers and advisers of the Board pronounce the water of the Thames, irrespective of exact position, to have inherent objectionable qualities. The Board's own scheme, already described by us, is open to objection, and has been strongly assailed in several quarters, but it does not seem to us to stand in any worse position than it did. The Board have been taking further evidence upon it (we should have been glad if they had examined foes as well as friends), and we do sincerely hope that prejudices will not be allowed to exert any influence, and that the greatest obtainable amount of information and knowledge will be brought to bear upon the inquiry, so that a right result in so momentous a matter may be arrived at.

We are led to these remarks by the reception, from the Board of Health, of four appendices to their "Report on the Supply of Water to the Metropolis," which was made in the middle of last year, and reviewed by us at the time. No. 1 consists of Returns to the Queries addressed to the several Metropolitan Water Companies; No. 2, Engineering Reports and Evidence; No. 3, Reports and Evidence, medical, chemical, and miscellaneous; and No. 4, a Report on the Cesspool system in Paris, by Mr. Thos. W. Rammell.

In No. 2, Mr. Austin gives a brief account of the various schemes for the improvement of the supply which have been laid before the the Board, and pronounces against the sufficiency of any of them. Mr. Rawlinson submits some remarks on the Croton Aqueduct, New York,* in the course of which he says:—

"In examining the Croton Aqueduct, there are several things to be considered, as example, and also as warning. It was a bold step in modern times, to cast about and look for the best supply the district would afford; and, contrary to existing usage, fearlessly to undertake a work which may be fairly considered to parallel the great works of antiquity. That water may with advantage be brought from a distance is now pretty generally allowed and practised, and as the subject becomes better understood, works of this character will be extended; but modern means and appliances in the use of bricks, tiles, and the metals, should prevent any repetition of such works as the Croton Aqueduct. In the Croton work, nothing has been learned or forgotten from the time of the Romans: every feature of it would have been equally well constructed 2,000 years ago. It would be difficult to devise a more expensive work: to cross valleys, or where the natural surface of the ground falls below the plane of grade, the aqueduct is supported upon a foundation wall of stone, forming a solid wall or pier, 17 feet thick, varying in height to suit the natural contour of the valley, and the plane of the aqueduct: placed upon such wall or pier, the true aqueduct or water-way is constructed with a brick lining upon a concrete foundation: the side walls are backed up with rubble masonry. The whole structure thus formed is banked up with earth on each side, trimmed off to a side slope of one to one, the surface of the embankment being paved with rubble. The sectional area of the water-way is in some instances about one-thirtieth that of the whole work, including pier and embankment. On portions of the line, as at Sing-Sing, the Mill River, Jewell's Brook, Hastings, at Jonkers, Clendinning Valley, and other places, masonry structures of the most expensive character have been constructed; but, nevertheless, in several instances it has been found necessary to line the water-way with iron: this is the case over the Clendinning Valley, and at Sing-Sing Kill. At the Harlem River and Manhattan Valley two cast-iron pipes, of 3 feet interior diameter, descend into, and crossing both valleys, delivers the water into the masonry aqueduct on the opposite side. The cost of the Croton Aqueduct may be contrasted with the following table:—

COST OF CANALS IN ENGLAND.

CANALS, including Land, have cost per mile as under:—

	Length in miles.	Total cost.	Cost per Mile.
		£.	£.
The Rochdale Canal.....	21¼	291,900	13,900
The Ellesmere Canal.....	57	400,000	7,017
The Kennet and Avon....	78	420,000	5,384
The Grand Junction.....	90	500,000	5,555
The Leeds and Liverpool	129	800,000	6,201
The Clyde Canal.....	35	200,000	5,714
Total.....	410¼	2,611,900	About 6,370
The Croton Aqueduct.....	38½	2,500,000	About 71,000

The writer suggests that iron, wrought and cast, may be much more extensively employed in waterworks than has hitherto been the practice. He says,—

"If modern science has taught us how to make a steam-engine, it has not yet fully inculcated the necessity there is that rigid economy should be studied in all engineering works. This, however, must be applied in an especial degree to all works connected with towns' improvements, namely, drainage and water supplies. If twenty houses can be perfectly drained and supplied with water for the cost hitherto charged upon one, and the work much better done, it is the duty of all concerned to see that so desirable a work is accomplished. In laying out new works, due regard must be had to efficiency as to economy, and it must ever be considered that there may be many degrees of cost up to an extreme maximum estimate, but there is only one minimum; and it will require constant attention, labour, and care, to secure this. Incompetency is adequate to any of the first; knowledge and judgment, with care, are requisite to secure the latter."

Mr. W. C. Mylne says, as to the advantages of the *constant* supply,—

"I think that where a domestic supply is required for a moral and well-conducted population, the constant system of supply is, under certain provisions, the most efficient, and in annual cost, I conceive, the cheapest. This opinion is given independent of sanitary requirements, with the extent of which we are at present but little acquainted. To work such an establishment well, it should be originally constructed for this system of supply, and the pipes should be laid deep in the ground to avoid the effects of frost. In expressing this opinion on the constant supply, I do not support the abandonment of the cisterns and tanks in respectable dwellings: one or more in every large house is essential for closet purposes, for steam apparatus, and to meet cases of unavoidable interruption of supply during repairs."

Captain Vetch says that, considering the probable increase of London, he considers *all* the best supplies of water that can be obtained near London should be secured, and recommends, first,—

"The Lea aqueduct, 14 miles long, to bring in a supply of 7,000,000 of cubic feet per diem, and deliver the same at an elevation of 140 feet above Trinity high-water mark.

Secondly. The Darenth aqueduct, 13 miles long, to bring in a supply of 3,000,000 of cubic feet per diem.

Thirdly. The Colne aqueduct, 12 miles long, to bring in 3,000,000 per diem.

Fourthly. The Mole aqueduct, 15 miles long, to bring in, from a point on the course of that river, a little way above the village of Betchworth, about 3,000,000 of cubic feet per diem."

Mr. W. Gale gives full illustrations of the Gorbals Gravitation Water Company's works, at Glasgow.——Mr. F. Braithwaite says, relative to supplies from *artesian wells*, as the result of a large experience in sinking wells;—

"I am of opinion that the result of my observations warrants me in conforming to the views of Dr. Buckland and other geologists, who consider the water in the deep springs under London or of the London basin as exhaustible, and that, comparatively, in a very rapid degree. I therefore differ with the projectors of the Artesian wells, who are, in my opinion, led into error by the partial success of wells sunk in a deeper part of the assumed basin. I allude more particularly to the *three wells* sunk, one opposite the National Gallery, and two others in Orange-street. If I may be permitted to digress, I am of opinion the Commissioners should obtain *correct* information touching these wells. But I wish it to be distinctly understood that I admit that there is still a large quantity of water in certain localities both in the land and sand springs, but I entertain serious doubts if any large quantity of water is to be obtained from the chalk under the metropolis; for in several of the chalk-spring wells, although but *recently* sunk, the water is sensibly declining."

The same appendix contains evidence in favour of the small-pipe system of drainage, and of combined back drainage instead of front drainage. As to the small pipes, Mr. Lovick, one of the metropolitan sewers' surveyors, says:—

"A great number of small 4-inch tubular drains have been laid down in the several districts, some for considerable periods. They have been found to keep themselves clear by the ordinary soil and drainage waters of the houses. I would refer to fifteen houses in the cloisters at Westminster Abbey, which have now for upwards of fourteen months been drained by small stoneware pipes, varying in diameter from 3 and 4 inches for the houses, to 9 inches for the outlet, and which have acted and continue to act in the most perfect manner. I have been furnished by Mr. Morris, of Poplar, with accounts of blocks of houses in his district drained by small pipes. One is a block of twelve houses in a court, six on each side: each six are drained *at the back* by one 4-inch pipe. They are connected with the closets, one to each house, to which the water *is not* laid on, the water being thrown down them by the inmates: the only other source of supply is from the overflow of the butts in the yards, yet the pipes have kept themselves clear from the period when first laid down, now upwards of twelve months since, to this time, and are still acting efficiently."

* Described in THE BUILDER some time ago.

A good supply of water; pipes of good form and material, properly laid; and fair usage, are necessary to insure success. As to the pipes now manufactured, complaints are made that they have not advanced in quality; on the contrary, it would seem that the increased demand has led to slovenliness and overhaste. The manufacturers should look to this in time, or they may be superseded.

Mr. Grant, another of the surveyors, says, on this point,—

"Within the last few weeks I sent to know how the 4-inch drains I had put in at Exeter, twelve or eighteen months ago, had answered, and in every case I found that they had done so perfectly, notwithstanding that some of them had been put down without water supply. The parties concerned are perfectly satisfied with them.

What is the largest number of houses in one block that you have drained on the tubular system?—130 for one gentleman, but it was not convenient for him at the time to lay on water. The drains have, however, acted well, notwithstanding the risk thereby incurred."

When asked if the drain-pipes now manufactured are not very imperfect, he said,—

"They are, both in form and finish. A great many of the quality called "seconds," as well as of common red clay pipes, are used by private bricklayers, when they can escape supervision.

Do not the potters continue to make right-angled junctions, and other improper forms of pipes?—Yes; because the importance of better forms is not generally understood, and a trifling saving of 9d. per pipe is made by using a straight in connection with a right-angled pipe, instead of a curved with an acute-angled junction.

Will a 4-inch tubular drain take off the water falling upon the roof, and yard, as well as that coming from the interior of a house of the largest class?—It will, if properly laid at an inclination of not less than 1 in 120.

What number of fourth-class houses may be drained by a 4-inch drain?—This will vary with the inclination and the extent of ground attached. In 1848 I drained five houses through such a pipe, and it has answered ever since perfectly and without any stoppage. Since then I have laid out the drainage of several blocks of eight, ten, and twelve houses, through 4-inch pipes, where the inclination was good; that is to say, 1 in 30 to 1 in 60."

Mr. Cresy, Jun., an assistant-surveyor in the Sewers' Office, was asked as to the competition *Plans for the Drainage of London*, sent in to the previous Commission:—

"You were instructed by the Commissioners to examine and classify the plans for the drainage of the metropolis: did any of them make back-drainage a main feature of their projects?—So far as I at present remember, none of them: some may have introduced the subject incidentally in their memorials, but had it constituted a main element in their plans, I should have retained a distinct recollection of it, having been anxious in examining them carefully to select any striking point as a *characteristic* of the individual scheme.

Did the competitors appear to deviate from the old practice of draining down the centres of the streets?—I think none of them; certainly the great mass of the plans was entirely upon the old system. * * *

Did these schemes appear to evince a knowledge of the effects of concentrated house-drainage in reducing the size of main lines and the superfluous dimensions of the present sewers?—So far as the *internal* evidence of the plans themselves goes, to which alone I am enabled to speak, I can safely say that they did *not*. Of course it is distinctly understood that I speak solely of the plans, and am not in any way pronouncing upon the information possessed by the authors on these points.

Did you find any extensive advance upon the system which has hitherto regulated the metropolitan drainage?—No. Of course the proposals of many were on a much larger *scale* than anything hitherto done, but I think I may safely say that no principle remarkable for its novelty in an engineering point of view is to be found among them. I do not mean that neither ingenuity nor merit is to be found there, but that no new *scientific* principle is advanced by them, nor any novel practical application of an existing principle; hence I cannot say that any advance upon existing systems has been made, or rather there being at present nothing deserving the name of a system, that a scientific basis for one has been created by the competition."

We shall return to these reports next week.

THE EFFECT ON ARCHITECTURE OF THE BUILDING FOR THE GREAT EXHIBITION.

ALTHOUGH the Great Exhibition of 1851 is an object of intense interest as well as hopefulness to the great bulk of the inhabitants, not only of this country, but of all the civilized nations of the world, there is a large class of philosophers of the "*nil admirari*" school whom one meets with every where, who go about asking *cui bono?* and prophesying nothing but evil and disappointment from this great industrial concourse of nations, and utterly unable to discover what good can arise to any one or to any art from such a monster exhibition.

It is not easy to meet such reasonings except by a counter prophecy, a *tu quoque* kind of argument, that leads to nothing, and the answer may safely be left to the result. In the mean while, however, it will be well to point out satisfactory results as they arise, and gather in our harvest of lessons as they ripen. My own impression is, that a result has already been obtained so striking and so important that, were no other to arise, I, for one, would think that all the trouble and expense already incurred had been well bestowed. I should rejoice that the exhibition had been projected, though the experiment terminated to-day, and went no further than it has gone, for I feel certain that the art of architecture—certainly not one of the least important—has received a lesson from it which must sooner or later be felt in every branch of it, and will create a new and, I trust, a brilliant era for that hitherto misunderstood and misused art.

To make my meaning clear, it will be necessary to go back a little, and also to state the argument rather more egotistically than is quite pleasant—but let that pass. I have all my life been trying to find out and elaborate the true principles of architectural design, and for the last few years have done little else than try to expound, both orally and by writing of various shapes and sizes, what I conceive to be the only principles on which success in the art has ever been attained, or is now possible, which is simply, in as few words as I can express it,—"Aggregation of experience, under the guidance of common sense, for all essentials, with the addition of a moderate amount of good taste for the ornamental parts." Following out these principles, there is no nation in the world, however low it may have been in the scale of civilization, that has not been able to achieve success in this art. We alone in modern Europe have chosen to substitute a principle of copying instead, and as a necessary corollary, we alone have failed to do any thing satisfactory.

While I was trying to elaborate these principles theoretically by examining the works of all nations in their various climes, Mr. Paxton, guided only by his own native sagacity, was practically carrying them into effect; and, following them out literally, has arrived at the splendid result we now see daily growing, as if by magic, under our eyes. Indeed, so completely has he put into practice my theory—he, of course, being ignorant of it at the time—that I would ask for no better appendix to my "True Principles of Beauty in Art," than the lecture he delivered at the Adelphi on the 13th of November last. In it he enumerates, if not in the identical words which I had used before, at least in substance, every step I had pointed out as necessary to success; and showed how such a process had led him, as it must inevitably lead every one, in every art, to as satisfactory a conclusion. He told his admiring audience how, when he had built his first greenhouse, he set himself to find out its faults, and see how it could be improved: how his next was in consequence an improvement on the first—his third on the second, and so on. As materials improved, he adopted them: any new process that was invented he greedily seized upon, combining all by his own sagacity, never looking back, but steadily progressing forward. He explained how, at last, it only required a few hours' thought to enable him to elaborate the whole design of the great exhibition house.

Following the same path, the Greeks were enabled, after aggregating the experience of some centuries, to build the Parthenon; and the same process enabled our Gothic forefathers to build the cathedrals of Rheims and Cologne; and, were we content to walk steadily in the same way, a century hence our children would be content to see, without remorse, the Parthenon burnt for lime, and Cologne cathedral used as a stone quarry,—simply, because they could do so much better that they could easily afford to despise such erections as these.

Let us now turn, for a moment, from the horticultural to the architectural side of the question.

When the commissioners for the great building were appointed, they advertised for designs: 240 were sent in, not only by English, Scotch, and Irish architects; but French, German, Italian—men of all nations entered the lists. Those who saw the designs, when exhibited in the rooms of the Institute of Civil Engineers, will admit that not one of them was equal to the occasion, and that the commissioners were perfectly justified in rejecting them all.* There were, as their report expresses it, "the Egyptian hypostyle, the Roman thermæ, the Arabian or Saracenic invention," and, they might have added, the Gothic cathedrals,—every form of copying, and every thing but what was wanted.

The next task, then, was for them to select from these rejected plans such suggestions as could be gleaned, and to make a perfect design for the purpose wanted. As occurs to all architects when they attempt to make a design for a large interior, the first thing that presented itself to the minds of the commissioners was the dome of the Pantheon, which, accordingly, was to be adopted, but the engineer suggested that with iron, and modern appliances, a far larger one could be erected; so one 200 feet in diameter was determined on as the principal feature. The next building that suggests itself to all architects from Michael-angelo downwards, is the Temple of Peace: this was rather too solid for present purposes, but the other thermæ of Rome presented modifications which were feasible; so immense arches enclosing smaller openings formed the ends, and long rows of aqueductal arches made up the sides. With all this array of ancient authority, and the prestige of best names of the profession, the design was published, but the public did not approve: people were this time in earnest, and it was not this they wanted. They felt this, but seeing what pains had been taken, and by whom the design was prepared, they were forced to admit that the problem was insoluble, and all that could be done was to try and stop the Exhibition altogether. At this juncture Mr. Paxton appeared on the scene,—either profoundly ignorant of or profoundly despising Vitruvius and his disciples,—had confidence in his faith in the 19th century, and was strong in his own common sense. For the first time in modern times it was a fair fight between the two antagonistic principles. The public, however, were now fairly roused, and unhesitatingly declared for common sense. The Exhibition was saved, and we have got a building of which every one approves.

Supposing the same principles had been carried into effect in the design for the Parliament Houses, the result would have been that the nation would have saved a million of money, and got a far more beautiful building than the House of Industry, because built of more solid and durable material, and its variety of purposes would have saved it from the monotony of the latter building. Had common sense guided the designers of the British Museum, half a million of the money wasted on that building might have been spent on the collection, and the whole been far better lodged in a more beautiful building than the present. Had the same principles guided the Com-

* We must guard ourselves from being supposed unreservedly to admit this.—ED.

missioners for the Building of new Churches, they might have provided twice the amount of church accommodation they have, in far handsomer buildings, and we should have heard nothing of Papal Aggression.

To return, however, to our building. In spite of all the praise that has been lavished upon it, the design is far from being either artistic or satisfactory, or even such a design as might easily have been obtained with better arrangements. Its great, almost its only merit is, that it is a common-sense design, but the public are amazed as well as delighted, at having at last got what for centuries has been denied them. The best feature in the design is, beyond all doubt, the circular roof of the transept, but that was Mr. Barry's suggestion, and had his idea been adopted of carrying the same roof down the whole length of the centre aisle, the building would have had some pretension to architectural beauty.

But it may be asked, if Mr. Barry could thus design the best feature of the building, why could he not design the whole? Simply because he is an architect, and is, by the charter of his guild, bound to copy. Neither his education nor the taste of his employers will allow of his doing any thing that is not *correct*: and the consequence is that he must spend his life puzzling over Greek mouldings, and Gothic details, neither satisfying himself nor pleasing any one else; and so it will continue to be, unless this great experiment open the eyes of the public, and they perceive that an ounce of common sense is worth a ton of mimicry; and when they do, there will no longer be that dissonance between an architect and his works that at present exists, nor that disseverance of opinion that unhappily prevails between them and the public. It is true it took the Greek and Gothic architects some centuries of perseverance in the path of common sense to accomplish what they did; but when we see what has been accomplished in one short life-time, we need not despair. Fifty years ought easily to put us in advance of all that has gone before.

My letter is already too long; but, before concluding, allow me one word of peroration, in the form of an assertion, which I think architects would do well to ponder over before going further. It is this,—that the first building which has been erected in this country with which all are pleased, is also the first in which copying has been wholly abandoned, and common sense, and common sense only, has dictated the design of every part and of every detail, wholly irrespective of all the so-called rules of art; and the unsatisfactory corollary to this is, that to obtain this result, it was necessary to take the work out of the hands of the profession, after they had been fairly called on to compete, and to put it into the hands of a gardener!

If architects will take this "shining example" to heart, and be warned by it in time, they have nothing to fear; but if they neglect it, I am afraid that, in spite of all that was said at the late meeting of the Institute, engineers and gardeners will take the bread out of their mouths. Once the people see what can be done by common sense, they never again can be satisfied with copying.

JAS. FERGUSSON.

NOTES ON EARLY SCOTCH ARCHITECTS.*

SCARCELY anything has been collected as to the architects of Scotland before the eighteenth century. Not much perhaps was preserved, but no attempt has been made to gather or illustrate even the few and scanty memorials that survive. Of the builders of our many cathedral and conventual churches only one name had been handed down to us—that of Gilbert, of Murray, a kinsman of the great lords of Sutherland, who, towards the middle of the thirteenth century, reared the High Church of Caithness, at Dornoch. He was a churchman—the bishop of the see whose cathedral he built; and Sir Robert Gordon, writing two centuries ago, records the tradition that "all the glass which served that church was made by St. Gilbert his appointment beside Sideray (now written Cyderhall), two miles west from Dornoch." At a much later period we have the names of several of those to whom was entrusted the repairing or completing of our great ecclesiastical structures. They would seem to have been Frenchmen for the most part. He was a Parisian by birth, John Murdo or Murvo, who towards the end of the fifteenth century had the charge of the cathedrals of Glasgow and St. Andrews, of the conventual churches of Paisley and Melrose, and of the abbeys in Nithsdale and Galloway. A few years later, Thomas French built one of the transepts of the cathedral of Aberdeen, and the fine bridge of seven arches which spans the Dee about two miles to the south of that city. The first secular buildings, possessing any architectural character, which arose in the north, were perhaps the design of the unknown masters to whom we owe our monasteries and cathedrals. It is recorded of St. Gilbert of Murray, that beside his cathedral of Dornoch, he built many royal castles. Kildrummy, in Mar, is said to be one of them. Mr. Robertson doubted not that a little intelligent research among our extant rolls and records would recover at least the names of a good many of the builders of our greater palaces and castles—perhaps also of an occasional church—from the middle of the fourteenth to the close of the seventeenth century. He had himself noted a few. In the year 1368 Sir William of Disschington, knight, steward of the King's house, and sheriff of Fife, was "master of work" of the church of St. Monan, in Fife,—a not unpleasing example of the Decorated or Middle Pointed style. In the year 1451, Alexander of Crichton—a kinsman of the subtle chiefs who reared the stately towers of Crichton—was master of work of the royal castle of Kildrummy. Other names were those of Gray, Spot, Gulde, Livingston, Valandy, Weddale, and Weir, who appeared during the first half of the fifteenth century in connection with the palaces of Linlithgow and Leith, the castles of Edinburgh and Stirling, and bridges over the Tay at Perth, and the Dee at Aberdeen. The architect's fee for the last mentioned work was to be 20*l.* a year for ten years. The name of Thomas of Cochrane—master of works to King James III.—has a place in history. The King, it is said, wished to raise him to the peerage; but the proud nobles, indignant that "a mason," as they termed him, should be made an Earl, put him to an ignominious death at the bridge of Lauder in 1482. Under King James V., in the beginning of the following century, Sir James Hamilton of Fynnart was employed in building or repairing the palaces of Falkland and Linlithgow, and the castles of Edinburgh, Stirling, and Rothsay. Passing to the early years of the seventeenth century, we notice a nobleman whose "great skill in architecture" was especially commended by his contemporaries—Alexander Seton, Earl of Dunfermline—under whose care the lordly *chateau* of Fyvie assumed its present shape. To Lord Dunfermline, also, may be ascribed much of the beauty of Pinkie House. Another noble architect of the same century was Patrick third Earl of Kinghorn and first Earl of Strathmore, who died in the year 1695, at the age of fifty-two. To him we owe the imposing pile of Glammis as it now stands. In a minute history which he has left us of his labours, he takes blame to himself for not consulting "any who in this age were known and reputed to be the best judges and contrivers." In the works hitherto spoken of, Gothic or Mediæval styles either reigned uncontrolled or greatly predominated. Classic features would seem to have owed their first introduction to foreigners—natives of Italy—who brought with them the taste for Roman architecture newly revived beyond the Alps. Perhaps no earlier traces of *renaissance* are to be found in Scotland than those which present themselves in the collegiate chapel of Roslin, built about the middle of the fifteenth century, and, according to an ancient tradition, by an architect from Italy. King James IV. had in his employment "an Italian mason," who had a salary of 7*l.* a-month, and to whose hand, perhaps, may be ascribed certain architectural peculiarities of Holyrood and Stirling. When taste and art began to revive after the tempest and wars of the Reformation, classic types rapidly advanced in prominence. In the elaborate ceilings of the castles of Craigievar in Mar, and of Balcarres in Fife, we see the warriors of Troy mingling their effigies with those of the Judges of Israel and the elder Kings of the Scots. This was early in the seventeenth century. The middle of that age saw the building of Heriot's Hospital, in which classic detail mingles still more largely with the spirit of the Middle Ages. He thought that they might now, without much hesitation, venture to vindicate the chief merit of this beautiful structure for a Scottish architect, William Aytoun, whose portrait, inscribed "Measter Meason to Heriot's Vorke," hangs in the Governors' room of the hospital. Beside his share in this edifice, Aytoun is known to have been the architect of Innes House, in Murray, receiving as his fee "for drawing the form of the house on paper" a sum of 26*l.* 13*s.* 4*d.* The name of another Scottish architect of the seventeenth century (John Montgomery, of Old Rayne) has been preserved in connection with the fine Market Cross of Aberdeen, built in the year 1686. Melville House, in Fife, was built in the year 1692, by Mr. James Smith, who is described by the editor of the "Vitruvius Britannicus," as "the most experienced architect of that kingdom (of Scotland)." The same work gives a plate of Drumlanrig Castle, in Dumfriesshire, built in the time of the first and second Dukes of Queensbury, but does not name the architect. Mr. Robertson reserved the last place in his catalogue—a meagre and imperfect one, he said—for Sir William Bruce, of Kinross, who might be regarded as standing between the obscure or forgotten builders whose names had been enumerated, and their successors the Gibbses, the Adamses, and the Mylnes, whose works were known to every one. Like so many of the earlier architects of the north, Sir William Bruce was a man of some rank—the hereditary sheriff of the small shire of Kinross. He appears as King's architect ("his Majesty's surveyor," as it was termed) in 1671. He had the dignity of Knight Baronet before 1685. Married to a lady named Halkett, he had a son, his successor, Sir John, and a daughter, who carried his estate and lineage into the knightly family of Hope of Craighall and Pinkie. He himself died about the year 1720; and, strange to say, his name did not seem to have found a place in any Scottish biographical collection. The mansion-house which he built for himself at Kinross, about 1685, was long one of the architectural boasts of Scotland. His plan of Hopetoun House—since built over by Adams—is engraved in the "Vitruvius Britannicus." The structure is there said to have been begun in 1698, and to have occupied four years in building. An earlier work of the architect was Holyrood Palace, begun about 1671, and finished, apparently, about 1679, though not, unhappily, altogether as Sir William first designed it. The first royal tenant of the new palace was the Duke of York, afterwards King James II. One memorial of that prince's taste survives in the name of "the Duke's Walk:" another rests upon less certain authority. He is said to have contemplated the erection of a city upon the site on which the New Town of Edinburgh arose nearly a century afterwards; and, so far had the matter gone, that his architect, Sir William Bruce, is reported to have planned a bridge for spanning the valley of the North Loch. This, at least, was affirmed by a tradition which was committed to record about seventy years ago. Alexander Kincaid—whose History of Edinburgh was printed in the year 1787—while giving all credit to Provost Drummond for the building of the New Town, adds that he was informed on good authority, that even this gentleman was not the original projector of so grand a plan. "The Duke of York," he continues, "afterwards the unfortunate James VII., was the person who, in a visit to Edinburgh, had the penetration to discover at one view the improvements that might be made, and pointed out to the magistrates the extension of the city both on the south and the north sides. No person, however, from that time, seems to have formed any design o putting in practice those improvements which the monarch thought possible, until Provost Drummond, by an indefatigable exertion of his interest with Government, obtained Parliamentary sanction for the improvement of the city, and by an equally unwearied exertion of the influence which his superior merit deservedly gave him over the people, prevailed on them to concur in the proper methods of

* The Heads of the paper by Mr. Joseph Robertson read at Architectural Institute of Scotland, as mentioned in our last.

rendering their city an ornament to the country and an honour to themselves." Kincaid gives some further details in a note:—"There are some people yet in life," he says, "who can attest the fact that Provost Drummond declared to them, when the foundation of the North Bridge was laid, that he only now began what the Duke of York (afterwards James VII.) proposed. And I am further informed," says Kincaid, "that a plan of a bridge across the North Loch was drawn by Sir William Bruce, of Kinross, and is supposed to be lying in the Exchequer here."

THE EXHIBITION AND ITS BUILDING.

SIR,—Your readers will be glad to learn, if they have felt the force of your well-meant and kindly-expressed remarks as to the strength of the building in Hyde Park as strongly as I have, that the contractors are strengthening the structure at the junction of the nave and transept, by *the introduction of a second column at each angle*, firmly bolted at intervals to the existing columns. This, as you pointed out some time ago, is a very weak part of the building, and could not safely have been left as at first constructed. A second girder ought to be put in on each side, over the wide span. I should not have written this note, but I heard you very improperly blamed and condemned for your remarks, a short time ago, in the presence of some *very* distinguished persons connected with the Exhibition, and I feel it to be my duty to point out that the justice of your observations has been fully proved by the additions made to the building, and to offer you my earnest thanks.

A COMMISSIONER.

On the 14th inst. a paper was read at the *Institution of Civil Engineers* by Mr. D. Wyatt, on the Construction of the Building in the Park.

In the course of it he said that the contractors' tender was only verbally accepted on the 26th of July, 1850; that possession of the site was obtained on the 30th of July; that the first column was fixed on the 26th of September, and at the present time (only 145 working-days since the commencement) but little of the building remained to be finished. To give an idea of the size of this building, it was noticed, that the width of the main avenue was within 10 feet double that of the nave of St. Paul's Cathedral, whilst its length was more than four times as great. The walls of St. Paul's were 14 feet thick, those of the glass building in Hyde-park were only 8 inches. St. Paul's occupied thirty-five years in building, whilst the Hyde-park building would be finished in less than half that number of weeks. Each man fixed about 200 superficial feet of glass per day.

In the course of the paper, Mr. Wyatt, to whom, from the commencement, has been entrusted the superintendence of the construction of the building, gave praise to Mr. C. H. Wild and Mr. Owen Jones, who had been associated with him; to Mr. Barry and Mr. Brunel, who, as members of the Building Committee, had made very valuable suggestions; as well as to Messrs. Fox and Henderson, and to Mr. Brounger, Mr. J. Cochrane, and others, for their exertions in the execution of the construction; and he concluded by reminding the members, that the weight of responsibility, the arduous duty of supervision, the honour of acting as the master-mind, to weigh the requisites, to determine the design, and to govern the construction of this great apparatus, had been reserved for Mr. Cubitt, the president of the Institution of Civil Engineers.

On the 21st the discussion of the subject occupied the whole evening, and was adjourned to the 28th. It was a *stormy* one, and we shall recur to it next week.

We have received several letters relative to these proceedings, but we are unable to give them a place. Those containing personal allegations should have been accompanied by the writers' names.

The following prices for exhibition counters and stands have been forwarded to Manchester by Messrs. Fox and Henderson:—"These prices are for the work in deal, and for the entire sale. Design No. 1, Deal stand 24 feet long, by 17 feet 6 inches high, 6 feet wide, without cupboards or drawers, and not covered in on the underside, 25*l.* 10s.—Design No. 2, Deal stand, 24 feet long, 12 feet 6 inches high, 12 feet wide at base, with three shelves, and close boarding underneath counter, not including cupboards or drawers, 33*l.* 15s.—Design No. 3, Deal stand, 24 feet long, 11 feet 9 inches high, 6 feet wide, boarded at ends and sides, 18*l.* 11s."

The *Fife Advertiser* says, speaking of the West Wemyss Coal-field, "Mr. Williamson is making a sofa wholly composed of coal: it is 9 feet long, with three compartments or divisions, and is sufficient to contain seven people sitting on it. The front standards are beautifully carved, displaying three mongrel animals, which forcibly remind the spectator of those richly-carved figures that appear so frequently in Dr. Layard's remains of ancient Babylon. This rare geological curiosity was ordered by General Wemyss, and it is highly probable that it will appear at the Great Exhibition, as it is ordered to be finished previous to that time."

The *Atlas* has a clever article on the huge block of coal which is to be exhibited:—"Dark and solid in outward semblance, but animate with a spirit of intense activity—passive to the weakest hand, and yet possessed of energies which, like faith, can remove mountains—cheap in cost and priceless in worth—exhibited where itself is the exhibitor, nay, creator of the exhibition—type of types, and monument of monuments, amidst the countless stores of all things typical and monumental of human industry—one black sombre-looking mass will hold a chief place within the walls of the Crystal Palace in the department appropriated to 'raw materials.'

A few days since we heard how the 'Exhibition block of coal' was hewn out of a seam thirty feet thick in a Staffordshire colliery; how it was fashioned into a cylinder, of size just sufficient to pass up the shaft into daylight, and of weight barely within the strength of the lifting tackles to support without breaking. Now it lies at the mouth of the mine, expectant of the time when it may be transferred to its destination beneath the transept. What other among the million glittering articles around, will have a better right to that post of honour?

'*Si monumentum quæris, circumspice.* In the multitudinous contents of those vast arcades—in the glass and iron edifice which contains them—in the means whereby the former were brought and the latter built—and, extending our range of vision, in the wide country round, with its incessant, prosperous, and world-defying industry—we see but the outcome and essence of the force that lies latent in that carbonised block. It needs no inscription. In homely guise it contains the summary of all virtues, the fountain of all power. Everything within reach of sight or thought pays silent homage to its beneficent attributes."

We have been favoured with a copy of a letter from Mr. Paxton to Lord John Russell, urging the free opening of the Exhibition to the public nearly from the outset, on the ground that a large addition will accrue to the revenue from the very fact of the Exhibition, an addition which Mr. Paxton states has been estimated, we know not on what data, at upwards of two millions. The deficit onerous on the royal Commissioners he proposes should be met by a Parliamentary grant. We confess we cannot agree with Mr. Paxton, as it appears to us that inconvenience and confusion would be the result of such an arrangement.

RATING BATHS AND WASH-HOUSES.—At the Middlesex Sessions, held at Westminster on the 20th, the committee for promoting the establishment of baths and washhouses for the labouring poor, appealed against an order of Special Sessions, touching the poor-rate of St. Mary. Whitechapel. Mr. Bodkin, Mr. Pashley, Mr. Parry, and Mr. Huddlestone were engaged in the case, and after a consultation between these gentlemen and their clients, it was arranged that the assessment upon the property rated should be reduced to 200*l.*, subject to a case, as to the liability of "Baths and Washhouses for the Labouring Poor" to be rated. The Court made an order to that effect.

PROFESSOR COCKERELL'S SECOND LECTURE ON ARCHITECTURE AT THE ROYAL ACADEMY, JAN. 16.

IN alluding to the great requirements of architecture as an art, the student was reminded of the leading topic inculcated in the preceding lecture—the necessity for an intimate acquaintance with the exact sciences, and to become conversant with the handicraft of labour, thus combining the skill of the head and hand. Alberti dwelt on the great importance of geometry, and the foundation of the Gothic style was unquestionably traceable to this science: without it the beautiful cloisters adjoining Westminster Hall would not have existed, and it was also the leading element in all Saracenic works. Perspective was also a first essential in design, and must be studied intimately; for it was perspective views of a building which revealed its beauties, there being no such thing in Nature as a geometrical elevation. All designs where this was not duly considered smelt of the office-lamp. The students were recommended on this point to consult the tenth book of Vitruvius.

When the Professor was present in Scotland on the occasion of laying the foundation of the National Monument, he was particularly struck with the indifference of the assembled dandies to the three great stones employed, each weighing two tons or more: it created no interest with them: they had no minds capable of appreciating the large masses used by the Greeks in their glorious erections. We should look at our work with the eyes of workmen, and reason upon the employment and magnitude of materials. The great writers, Vitruvius, Alberti, and Palladio urged our attention to this distinction, that all the Greeks did was large in thought and material, while the Gothic was formed of the union of all that was small. In criticism, the sneering and finding small faults was never useful: the soundest judgment on works of art are good-natured remarks. The veneration for antiquity was to be received with limitation. There were remaining many fine and wonderful works deserving inquiry; but a blind admiration because of the mere antiquity made Cæsar, once dead, become a demi-god, and transformed a pious man of the Middle Ages into a saint of to-day. Egypt, India, and Greece followed a favourite model, and remained true to it; but we find a superstitious indolence more agreeable to our nature, and yield to its influence. We should eschew this, and reflect that nothing is worthy of science but what is conceived for the purpose. Sir C. Wren says, "The study of architecture as a fine art is the study of antiquity." His great work of St. Paul's shows how truly he studied what had been done in the Middle Ages, as its structure was entirely Gothic in principle. There were the aisles for processions, the system of buttresses throughout, and all the other known means. It was much to be regretted that the magnificent first model he offered was not accepted: the study of it, as it still existed in the cathedral, was worthy of the highest attention, being so peculiarly adapted to our pure and simple ritual. But Sir Christopher Wren lived when the bigot James II. influenced the choice, and had to prepare the design of the present structure. The architect is said to have wept on the occasion. In all his churches the same intention of construction adapted to our ritual would be found. But in the churches lately built or now building, instead of designating their consecration to Protestant worship, they are as much as possible conceived to make believe we are Roman Catholics.

The grammar and syntax of the art was to be acquired by a diligent study of the great writers, Vitruvius, Alberti, Serlio, Palladio, Vignola, and De Lorme. Their works ought to be found in the library of every architect. Dr. Johnson says,—"Theory is a scheme, a speculation, a plan." Art is a system of good rules for a certain end; therefore, the study and analysis of the great authorities previously named would enlarge the mind of the student to the importance of reading diligently the learned investigations contained therein.

Vitruvius quotes from forty-one Greek authors, whose writings are lost. His work is the great text-book of antiquity, written 1800 years ago. There is nothing of the epoch so extensive, having only a few scattered notices by Pliny, from Vitruvius to the Middle Ages.

Although his style is very prosy and plebeian, every student must have his Vitruvius, and carefully digest the meaning, although it is often difficult to be got at, from the complete absence of his relation being divided into periods, there being no full-stop made in any page. The entire manner of Gothic construction will be found in his rules, and every edifice of Athelstane, William the Conqueror, and Edward III. is derivable therefrom. The church at Nuremberg is precisely what he describes as a tetrastyle, with the columns placed inside instead of externally. Vitruvius's book is divided into ten parts or divisions: the third division has been ably illustrated by the late professor of architecture, Mr. Wilkins. Fourteen hundred years after Vitruvius, when great changes were operating, Alberti wrote his work, also divided into ten books: there is no other writer so logical. The next writer in point of date was Serlio, who lived a good deal in France, where he was employed by Francis I. The earliest edition of his work is dated 1545: he employed Peruzzi, also an able painter, who treated perspective admirably in his pictures. It was a subject of sincere regret that his writings were not translated and published for extensive use. The first edition was so rare that the Professor had never seen it. Vasari, although a text-book of the first order in the fine arts, had never been translated: a talented lady was now occupied on it. After Serlio came Philibert de Lorme, who published a curious and valuable work, the more interesting to us, as he is the earliest writer on the architecture of northern Europe. He treats particularly of vaulting in stone, and was very ingenious in adapting Italian and classical ideas to the requirements of northern habitations, by introducing, among other things, the use of large windows, so essential in our dull and often clouded atmosphere. He treats also of the high curved roofs so often seen in France, and gives many notions to make chimneys ornamental to a building. One of the best examples of grouping chimneys for architectural effect is seen at King's Weston, near Bristol, by Sir John Vanbrugh. A more glaring deforming of a beautiful building could hardly be devised than the spikes of all kinds and irregular form that surmount Somerset-house, when viewed from the river. In general, De Lorme's learning goes to show that in French works a good deal of ingenuity is thrown away. He is also facetious in his instructions how the architect is to conform with civility to all the gradations of a household, from the butler down to the gentleman's gentleman, and does not fail to paint a vivid caricature of a busy body discovering a mare's nest. The succeeding lecture will continue the analyses of other writers upon the science and practice of architecture.

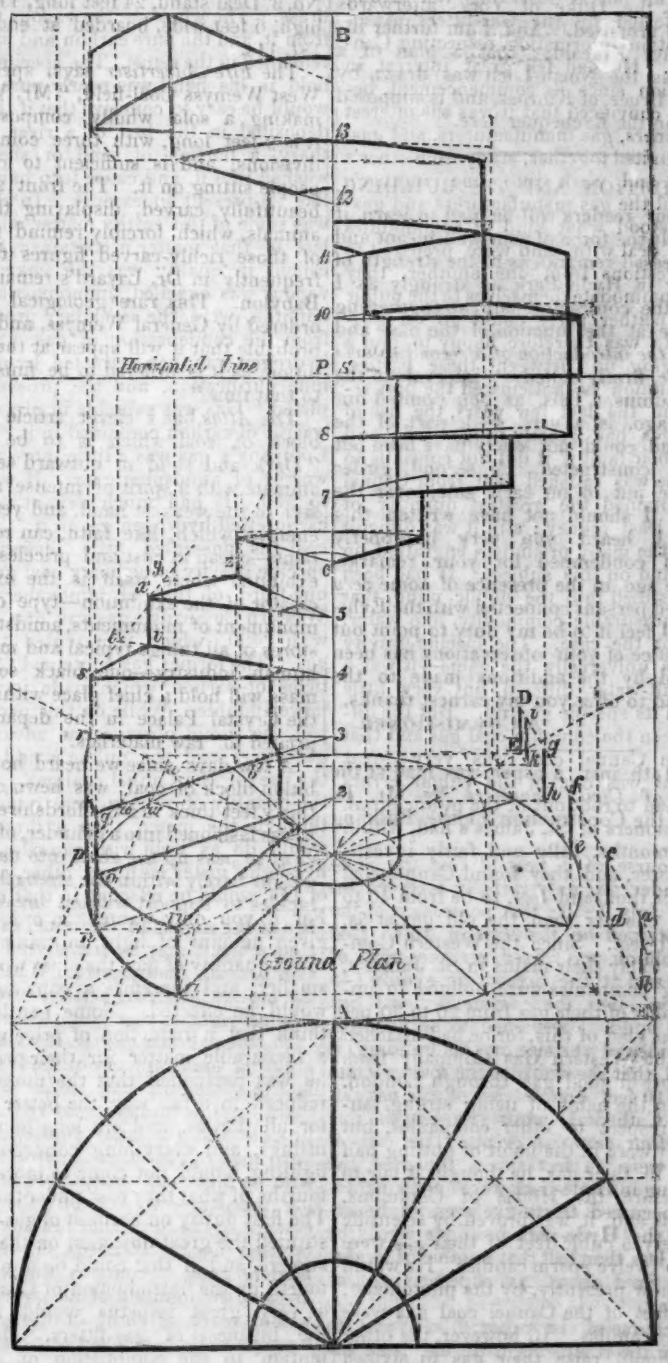
BATH CITY WATERWORKS.

CONTRACTORS' ACCOUNTS.

AT a meeting of the Bath town-council, held on the 14th inst., a report was received from the committee relative to the arbitration case that had been pending between the corporation and Mr. W. Baker, of Bristol, their contractor for the formation of reservoirs at Batheaston. These reservoirs were designed by Messrs. Manners and Gill, of Bath, for supplying the city with water, and were completed in 1849: since that period difficulties have existed in the settlement of accounts, and in May last the parties agreed to refer the matter to arbitration. Mr. James Simpson was chosen by Mr. Baker, and the corporation named Mr. Thos. E. Blackwell: these gentlemen, not agreeing, determined on availing themselves of their powers, and called in Mr. Brunel as a third referee to act with them. Mr. Baker's claim was as follows:—For cash remaining due to him on account of his contract for reservoirs, 636*l.*; for pipes furnished by him, 200*l.* 10s.; for extra work, 2,128*l.* 16s. 4d. Mr. Baker's total claim, therefore, was 2,965*l.* 6s. 4d. The arbitrators having held numerous sittings at Westminster, and taken depositions on oath from both parties, have awarded to Mr. Baker 1,132*l.*, having struck off from his demand 1,833*l.* 6s. 4d. The cost of the works, therefore, will have been, exclusive of iron pipes not in contract, 7,181*l.* 10s., being an excess above the contract sum of 295*l.* 10s.

TO DRAW A WELL OR SPIRAL STAIRCASE.

PREPARE a ground plan by describing a circle and dividing it into as many parts as there are steps passing once round the column in the centre, then the usual method of drawing the circle in perspective will produce the ground plan. Draw at any height the horizontal line and the perpendicular AB from the centre of the circle: the place where this perpendicular cuts the horizontal line will give the point of sight PS. At one side of the ground plan make a vanishing scale, CDEF. Let CF be the height of a



step on the same scale employed in the circle: CF, *ab*, *cd*, *ef*, *gh*, *ik*, and DE, will represent the heights of the steps as they recede from the eye. The whole of the ground plan must be carefully prepared before the elevation is commenced; then begin by laying off the first step at *l m*, equal to *a b*, and upon the perpendicular from the centre of the ground plan mark off the other end of the step 1, 2, equal to *e f*; repeat this measurement upwards, producing the points 3, 4, 5, 6, &c.; draw *m* 2; from the point *n*, the place over which the next step commences, draw *n o*, equal to *c d*; join *o* 2, and *o m*, with a slight curve, to correspond with *n l*, over which *o m* is placed: this will finish the first step. For the second, make *o q* equal to *o n*, or *c d*; join *q* 3; make *r* 3 parallel to *p* 1, because this line is placed exactly over the line *p* 1 in the ground plan; make *r s* equal to *e f*; join *s* 4, which will be parallel to *r* 3; produce a line from *s* towards the point of sight, stopping at *t*, which will represent the *p u* of the ground plan in an elevated position; join *t v* parallel to the horizontal line,—this will be an elevated representation of *u w*; join *s v* by a curve corresponding to *p w*; join *v* 4, and the third step is completed. Make *v x* equal to *h g* on the scale; join *x* 5, draw a line from *x* towards the PS, stopping at *y*, which will represent *w a'* of the ground plan; draw *y z*, parallel to the horizontal line, to represent *a' b'* of the ground plan; join *x z* by a curve as *w b'*; join *z* 5, and another step is finished. The same directions may be repeated for each of the remaining steps. Care must be taken to place the corners of each step upon the perpendicular line which comes from their representative corners in the ground plan, as each step has its corresponding portion of the circle perspectively given in the ground plan.*

JAMES CHAPMAN.

MILDEW IN BOOKS.—I send the following receipt, which I have copied from a book containing many others:—"Take a feather dipped in spirits of wine and lightly wash over the backs and covers. [Indebted to THE BUILDER for this.] To prevent mould, put a little into writing ink." Another, "To take mildew out of linen:—Mix powdered starch and soft soap with half the quantity of bay salt: mix it with vinegar, and lay it on both sides with a painter's brush. Then let it lie in the open air till the spots are out."—*Notes and Queries*.

* The following is a quotation from the "Jesuits' Perspective," taken from the directions for drawing the same subject on a square:—"Qui voudra faire ces montées rondes il n'a qu'à réduire le quarré en rond selon les pratiques précédentes et il aura toute la même facilité qu'au quarré en ce qui est de tout le reste." With all due deference, it will be found, upon examination, that the *detail* soon ceases to be like that of the square; therefore, I have employed a method of working it out which differs so far as regards the rounding off each step to produce the circle as it ascends, which is the characteristic difference between the two subjects.

ON CANNEL COAL.

WE mentioned last week the visit of the Gas-fitters' Mutual Association to the works of the Western Gas Company. We now give an outline of the lecture which was delivered by Mr. Wright.

The lecturer commenced by expressing the gratification he felt at observing the strong desire manifested by the Gas-fitters' Association to obtain information respecting Cannel coal gas. He had felt great interest in that Association since its commencement, because he was convinced that it was the interest of gas consumers, gas manufacturers, and gas-fitters, to be united together, study each other's departments, and work into one another's hands. Until the gas manufacturers and gas-fitters understood what kind of commodities they had to deal with, and were prepared to receive suggestions from one another, they could not accommodate themselves to the public desires, and neither party could go on prosperously. He was therefore happy to find a union springing up between these parties, from which union he anticipated the best results. Within the last few years, the use of Cannel coal gas had greatly progressed; and it would be their fault if it did not continue to do so, for he was satisfied that from Cannel coal they obtained the greatest quantity of light for the least money: still it was difficult to deal with the many prejudices engrafted on the public mind on this subject. It had been studiously instilled into the public mind, that gas was a measurable commodity, like water. That was not the case. The specific gravity of water was universally the same—it was a unity, for salt-water differed but very little from fresh in its specific gravity. But the difference between the common coal gas and that derived from Cannel coal was very great indeed. That was one of the vulgar errors which they had to root out of the public mind. The commissioners of St. James's had, within the last few months, fully and fairly investigated the matter, and they found Cannel coal gas, at 6s. per thousand feet, to be from 40 to 50 per cent. cheaper than the old gas at 5s. per thousand feet. Since the Western Company applied to lay their mains in St. James's, the opposing companies were obliged to improve the quality of their gas from 20 to 30 per cent. He was glad of this, for he had attached himself to the Western Gas Company from a desire to spread good gas through London. He was not in the habit of using strong language with respect to other companies, but now that they were in the habit of putting half Cannel coal in their gas, he thought it fair to explain. Before the House of Commons, twelve months ago, it was proved by scientific men, that every 5 cubic feet of their gas were only equal to twelve sperm candles. He would be able to show presently, by the photometer, that 5 cubic feet of the Cannel coal gas were equal to thirty candles. If, however, the other companies should raise their gas to sixteen candles, it could not be expected that the Great Western Company could raise its gas to thirty-two. He would now go a little into the natural history of the coal from which this gas was produced. They were all well aware that coal was universally produced from decayed vegetable matter: geologists were all agreed in this. He had before him some specimens of vegetable matter, which time and the rapidity of chemical action, and other circumstances attending their submersion in the bowels of the earth, had converted into coal. One of these was a specimen of brown coal, in which some of the leaves were quite perceptible. This specimen was from the tertiary formation. It was useless for the manufacture of gas, but was employed in France for the manufacture of naphtha. The next specimen was a Cannel coal, called "Boghead Cannel." It produced a very dull sound when struck. In that respect it very much resembled wood, from which it was little removed; but it yielded 12,000 feet or 13,000 feet of gas of astonishing illuminating power. It was the most extraordinary specimen of coal with which we were acquainted. The Wigan Cannel was almost the opposite extreme of the Boghead Cannel. The Wigan Cannel was a bright, lustrous, pitchy, and compact mass. Between these were the Wemyss, Lismahago, and Newcastle Cannels. He remarked, about two years ago, that the illuminating power of the gas was in proportion to the dulness of the coal from which it was produced; and he was bold enough to attack the common theory, which was the very opposite. The coals which had the least amount of basis were the brightest. The manufacture of Cannel coal gas was similar to that of common coal gas. The coal was first put into retorts about the heat of melting brass. The whole of the vapour was expelled from it, and the pure carbon and earthy matter remained in the retort. The specimen which he held in his hand was nearly pure carbon. It would be easy to conceive that if that had been deposited in the bed of a river, or in an estuary, a portion of sand or silex would be washed into it, and cause it to have something like its present appearance. In all coke there was some of this earthy matter mixed, and the less of that matter it contained, the more excellent in quality was the coke. After the vapour was expelled, ammonia-water, tar, and naphtha, were the secondary products arising from the condensation of gas. Sulphuretted hydrogen was then extracted by means of the lime purification, and the process was completed. Gas was valuable in proportion to the weight of carbon contained in it. The Western Company's gas was a little more than half the weight of atmospheric air. It was from ·550 to ·560. It had much olefiant and very little carburetted hydrogen gas in it. The ordinary coal gas possessed little olefiant gas. The specific gravity of ordinary coal gas was about one-third of that of atmospheric air. The Western Company's gas was ·550, as compared with ·400, which represented the ordinary gas. The former gas contained 150 more particles of carbon, which made its illuminating power double. While on this part of the subject, he would observe one advantage which gas-fitters and the public would derive from the use of the Cannel coal gas. If only half the quantity of vapour were required to pass through the meter, then a three-light meter would do as well with cannel-coal gas as a five-light meter with any other, and a saving of 15s. would be effected in that matter alone. For if you only wanted, in order to obtain a given amount of light to transmit half the usual quantity of gas, the pipes would be much smaller, and therefore a considerable saving would be effected. Some gentlemen might think that a reduction of price would not be a favourable matter for their profession, but he was persuaded that the more prices were reduced in a fair way, the better it would be for all parties, and ere long he thought gas-fittings, and everything connected with gas-lighting, would not come to more than three-fourths of what they cost under the old system. The first outlay on account of gas-fittings constituted the great objection on the part of consumers, and if that could be diminished one-fourth by the introduction of Cannel coal gas, a very great impetus would be given to the business of gas-fitters. He called attention to the combustion of gas, and the particular circumstances under which combustion was effected. No part of the lecture could be of so much importance to gas-fitters as to know the precise steps gone through during the process of combustion, and to know the burners that gave the greatest amount of light and occasioned the least amount of nuisance. That burner which produces the greatest amount of light is not always the most agreeable, and therefore it was sometimes advisable to sacrifice the greatest quantity of light for convenience. Some supposed that where the greatest quantity of light was given the flame was the brightest. That was not always the case; for of the eight burners of different kinds then in operation, those whose flame was the most dusky in colour gave the most light. The gas coming out of the jet before him was composed of hydrogen and carbon. The first operation that took place was this: the hydrogen, having a greater affinity for the oxygen of the atmosphere than the carbon, flies out, and seizes the oxygen. The bottom of the flame is blue, because there the hydrogen and carbon are combined, and no two gases can produce light. In the inside of the column of flame a series of little balls of carbon, or particles of soot (too minute to be seen, perhaps, by the microscope), are passing: the oxygen attacks them; and, in the instant of combustion, they become red hot, and that causes light. There could be no light without smoke. The ancients had a proverb, which implied so much—*Ex fumo dare lucem*. If a piece of iron were passed through the lower part of the flame, no smoke would be deposited upon it, but if placed at the top it would become smoked at once.

FOREIGN NEWS.

Omnia Omnibus!—This singular and rather Communist inscription on the splendid Gallerie St. Hubert, Brussels, seems to have, after all, received a practical corroboration and confirmal in England, by the fact, that public baths and washhouses, established at an almost nominal admission-fee, have not only paid their expenses, but even yielded a considerable sum of profit,—in some instances 130*l.* in one year. Yet, it was the great expense attending on the establishment of such public commodities (necessities?), which delayed their execution for such a considerable time, as the necessity of public baths and washhouses had been urged in London *forty years* ago. And, thus, a novel and hitherto unknown axiom of political economy has come to light, viz. that "every commodity which the mass of the people require for their human-like and human-worthy existence, *may* and *can* be obtained at a price accessible to them . . . . *if* the establishment and management thereof be conducted *wisely*, *cleverly*, and *honestly*,"—a theme on which it does not convene to dilate here more extensively. We may only state, that in Cologne, Hamburg, and other German cities, *cheap dining-houses* have been established, which do well and pay their expenses. It cannot be said that such an establishment would encroach on the business of keepers of dining-rooms—but *suppose* it did: why, it is better than to let (especially in the inclement season) the poor go without a warm dinner, and subsequently and consequently saddle the whole community with taxes for infirmaries, dispensaries, and the ultimate keeping and burial in workhouses. The price of a meal in Cologne is five pfennige (one halfpenny), for which a person can obtain a bason of substantial soup, made of peas, groats, &c.; but, of course, he may take two, if he likes, and bring a piece of meat and bread with him.* The utmost cleanliness is observed in these places, the table-cloth is changed every day, the floor scoured; the rooms in Cologne and Hamburg are well lighted (no window-tax!), adequately warmed in winter: in fact, after the experience of the baths, it is no more *charity* which is dispensed in these places, but they are only one of the *new moves* of our century. If the managers make and *keep* such places cheerful and *homely*, why, the people ought, as a matter of course, to behave as if they were *at home*. A German proverb says, "It is a bad bird which soils its own nest."

Lighthouses in France.—According to an official report, there are on the sea-coast of France, at present, 57 lighthouses of the first class. Besides those destined to mark at a long distance the points of the coast, 107 lights of less reach indicate the entrance of the ports and bays of France. Of the 57 large lights, 17 are in the Channel, 25 on the Atlantic, and 15 on the Mediterranean.

Cologne.—Rhenish Archæological Society.—First Coversazione, 8th Jan.—The secretary, Dr. Overbeck, recapitulated the previous activity of the society, whose meetings had been interrupted since 1847. Professor Welker explained the painting of an antique vase, which had never been properly understood, although it contained an interesting inscription of Doric names. Before Arkesilaos, the famous ruler of Kyrene, *silphion* (a medicinal *drug*) knitted together in masses, is weighed and placed in vaults. Silphion was one of the chief exports of Kyrene, as it was extensively used by the ancients both as a medicine and a spice; and it seems to have been grown as a *régale*, as Arkesilaos assists the present act with his sceptre in hand, and a clerk seems to make a report to him. Dr. Overbeck then directed attention to a lecture delivered at the Berlin Congress of Philologists, "On the Scope and the present Position of Archæological Science," which contains a very sys-

* We are convinced, that if sound bones be boiled in Papinian coppers, a pint of substantial pea or other soup, with some meats and herbs added, can, at present prices, be furnished here for five farthings, or even cheaper.

tematic and logical disquisition of that branch of knowledge, dividing it into the history of art, history of monuments, technics, &c. M. Freundenberg concluded the meeting by a memoir on some monuments found lately on the Cribritzerfeld, in Styria, whence he proved this to be the locality of the ancient *Flavium Solvense*, mentioned by Pliny, as one of the towns of Noricum.

Nüremberg.—Harmony between Master and Men.—On the 31st December, the workmen of the engine manufactory of Messrs. Cranes and Klette honoured their employers with a festival procession by torchlight. More than 400 such flambeau-bearers gave to the assemblage a very imposing aspect. Messrs. C. and K. had, at much personal sacrifice, retained all their men during the calamitous year 1848; and on this occasion they have promised to establish, by their own means, a pension fund for their workmen, which, is however, to be managed by a committee of the men themselves.

THE SOCIETY OF ARTS.

AT the meeting on Wednesday evening, January 15th, Mr. Henry Thomas Hope, M.P., in the chair, an address from the Council was read by Mr. Henry Cole, as its chairman. With reference to the success which has attended the recent efforts of the Society, Mr. Cole observed:—"It is with societies as with individuals, they do not, cannot, prosper by following mere formulas. An individual who has no purpose in the world but to vegetate may as well not exist; and, whether he be rich or poor, the world soon finds out that he is little else than an incumbrance, and treats him with indifference. To prosper, indeed, in these times, the man must be at work. We find the same analogies existing with societies. Unless they prove their ability to work, and work to some useful purpose, they become virtually extinct. A society cannot exist merely upon its name. Not only must it be alive to perform the functions it affects to do, but it must perform them in accordance with the advancing knowledge and increasing demands of the time. Men's wants in 1851 are very different from what they were in 1751, when the public wants created the Society of Arts. The arts, the manufactures, and the commerce, at the two several periods of development, appear to be scarcely the same class of things. To teach or practise art as it was taught in 1751, would be held to be ridiculous at the present day. So with manufactures. The Hargreaves and Hoyles, who print calicoes by miles, would smile at the manufacturer who should propose to re-establish a factory at Chelsea, and paint patterns on cottons by the camel's-hair pencil, as was the case a century ago, in the early days of calico-printing! To go to market again on pack-horses, and not by railways; to carry guineas in pouches, and to be robbed of them on the highways, rather than to use blank cheque-books of the Bank of England; to pay postages in shillings rather than pence,—would be only to revert to the practices of commerce in 1751."

The Council do not propose to hold any further Exhibitions this season; in order that the rooms of the Society may be free at all times to promote the interests of the Great Exhibition. It is their intention, during the period of the Exhibition, to hold several conversazioni and meetings for the discussion of topics which, it is foreseen, will arise out of the Exhibition.

"But it is not only upon the direct, but also the indirect circumstances and wants arising out of the Great Exhibition, that the Council will bestow their attention, and contribute the influence of the Society. There can be no doubt that the Exhibition will give rise to many new relations between men and things. Already a stronger connexion between the artist and manufacturer is springing up, beneficial to both. It will be the duty of the Council to foster this connexion; and they are considering a plan by which a friendly meeting for the discussion, investigation, and best means of promoting the union of art and manufactures may take place every year, in some one of the great manufacturing centres, somewhat on the principle of the meetings of the British Association and the Archæological Societies. Connected with such an union, the Council feel that much remains to be done to educate the mass of the people in the perception and practice of art, which the Exhibition is likely to make but too apparent; and taking advantage of the lesson we are likely to be taught, the Council purpose making an effort to establish elementary drawing and modelling schools throughout the country. They have submitted this proposal to His Royal Highness the President, and they have the satisfaction of knowing that he thinks it may prove very useful."

FREE PARK.

IT cannot be questioned that the parks of London are not only highly ornamental, but eminently useful, as places for healthful recreation for the masses, as well as for the display of fashion: by day they are all thronged with health and pleasure seekers, and with open gates their drives serve as agreeable lines of intercommunication between the extended districts of town, which now encompass all these reserves.

At night, however, there is no thoroughfare open through them, and the inhabitant at one side of Hyde-park, who is removed but half-a-mile from a house on the other side which he wants to visit, must, after nine o'clock p.m., take a circuit of two miles and a-half, or three miles, to effect his object: this, added to the like distance on return, imposes on him the loss in time of one hour, and in labour of four miles!

For what purpose this great central space is encircled with iron palisades, and guarded by closed gates, it is hard to conjecture: there is no herd of deer, nor yet kine, now to disturb; no plantations to damage, nor other public treasure to guard. It may be very requisite to debar the multitude from lying out in summer on the herbage, and even requisite to save wayfarers from being plundered, by restricting intercourse to certain broad ways, but there is no good reason wherefore there should not be at least one open carriage-way, *well lighted*, and guarded by police, free for passengers throughout the night.

That upwards of two miles—from Park-lane to Kensington Church on the south side, and a like distance (from Park-lane to Notting-hill) on the north side—should be wholly sealed up, appears to be unnecessary, as it is unjustifiable, and is a severe infliction of cost and trouble upon the residents of the great suburbs of Brompton, on one side, and of Bayswater and Westbourne, on the other.

At this particular crisis a line of road across the centre of Hyde-park, from north to south, is essentially required for the freedom of transit to and from the *Exhibition*, and as there is a bridge (close to Kensington-gardens) ready built, a wall on one side (the Haha) ready constructed, with a gate and lodge at the end of Westbourne-terrace, but little expense could be needed to complete the traverse so as to issue upon the Kensington high road at or near Gore-house.

The progress of society demands the accommodation here pointed out, and the further continuance of *exclusion from the park by night*, and of the severance of two great townships containing a population of at least 20,000 persons (the greater part of whom suffer frequent inconvenience from the prohibition), is a wanton injury to the residents.

That the boundaries should be railed and spiked, does seem a piece of raillery, and can be continued but in accordance with usages in times gone by, when the surrounding districts were rural, when there might have been game to preserve, and when the office of a *ranger* might have been essential to chase marauders from those then unfrequented liberties.

Were it essential to rail in both sides of the proposed route, an open *wire-fence* would suffice, and could be of no detriment to the sylvan or verdant aspect of the park, any more than the wire-fences (round the private concessions) in Regent's-park, may be considered to mar the character of these fields for commissionerships.

If there are to be *night reserves* of wide extent, do let them be inclosed and bastioned at a distance from the vitals of the metropolis: the fancy for iron spikes and exclusion might be harmlessly enjoyed by functionaries, say at Battersea-fields, or (for amusement sake) in some *sportive reserves* to be yet retained in the New Forest. Such fantasies might *there* fence in rank and station, whilst the adventurous and hurried artizan returning home by night should escape being *impaled*, as has frequently happened to the trespasser traversing our iron-bound park. QUONDAM.

THE PLANS OF YORKSHIRE CHURCHES.

IN the December number of the *Ecclesiologist* (page 257), in an attack on a local architect, it is stated, "that he should have not cared, in his plan, for right angles, following the precedent, for example, of the old parish churches of York, in which there is hardly a right angle to be found." Now, the old parish churches of York *were in the olden time perfectly rectangular*, and are still so, and the aisles are all parallel, with one exception, and that appears to have arisen from contiguous excavations and decay of materials.

Of the twenty-three churches in York, nineteen are rectangular, of which three are modernised: the remaining four are fragments, viz., St. Crux, or the Holy Cross, on the Pavement, with its brick tower, and western *oblique* end, rebuilt to widen the shambles, in 1697, but the east end remains perfectly rectangular; Christchurch, in Colliergate, with its oblique east and west ends of recent creation, which is but a fragment of the original building, the ends having been made to accommodate Colliergate on the east and the before-named shambles on the west; the south aisle of St. Helen's in the square, which has been rebuilt with two oblique faces at the west end, to give space entering to Davygate; and the fourth, St. John's, in Micklegate, which had its north aisle rebuilt oblique to the east, and the whole of the east front is now in progress of skewing or building obliquely, to form a wider entrance to North-street, which conducts to the railway terminus. EUREWIC.

WHAT IS TO BE DONE ABOUT WESTMINSTER BRIDGE?

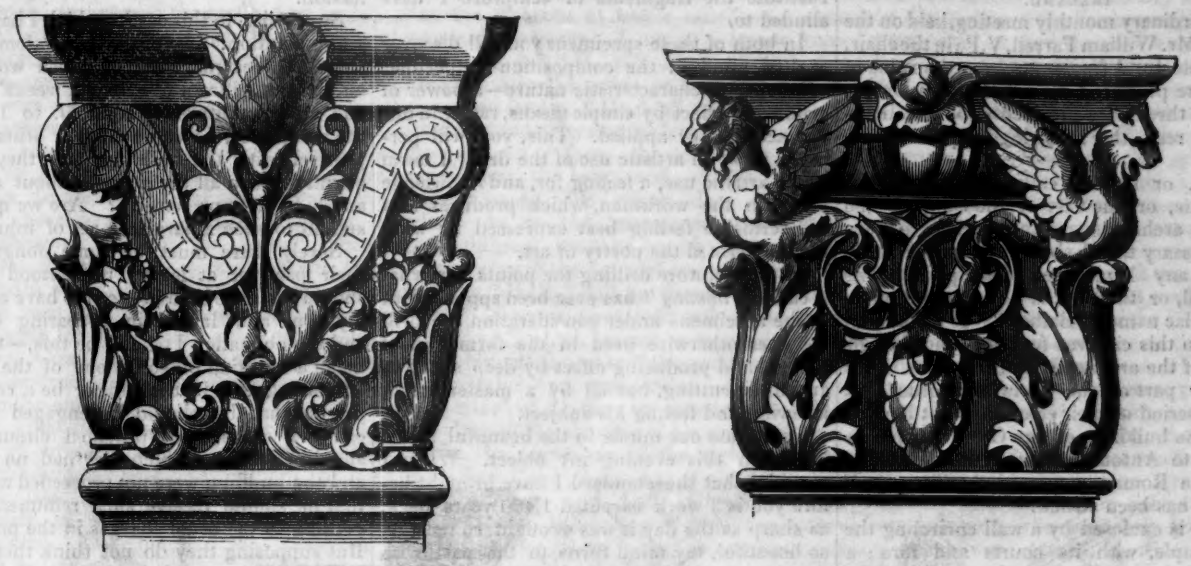
YOU occasionally favour your readers with some observations regarding Westminster Bridge and the New Houses of the Legislature. It would be a great boon to the entire neighbourhood, both ends of the bridge, if you could enlighten us as to the intentions of the Government respecting the new bridge, the proposed temporary bridge, &c. There are so many rumours about, that, with many of my neighbours who are leaseholders, I am in a state of perfect perplexity as to what is about to be done. I am told, on pretty good authority, that the new bridge will certainly be erected on the old site; that Mr. Barry has quite changed his opinion about the bridge being injurious to the new Houses; but that he wishes the new structure to be 100 feet broad, and flatter than the present one, allowing 18 feet only from high-water mark to the key-stone of the arches. To this proposal, I hear, the City Navigation Committee object, and say they must have 25 feet clear above high-water mark.

I believe Mr. Barry, in wishing a low bridge, urges the inutility of a lofty one, as all the barges and steam-boats lower their masts and funnels when passing under. Now, can you not take up the cudgels for us a little in your journal? Every one believes that this entire neighbourhood will undergo great changes shortly, and as we here are all so much interested, it is natural we should feel a little anxious about these proposed changes. It does appear to me most lamentable and melancholy to see such a thing trifled with and shelved session after session—a work of such acknowledged utility and greatness; and is not the present bridge, with three arches blocked up in the centre of the Thames, a disgrace to the country—the centre arches of a metropolitan bridge kept up by a wooden leg! When could there be a better time to commence such a work than now?—money abundant and cheap, and a full exchequer. What a delightful thing it would have been to have had the new Houses of Parliament and the bridge finished in such a year as this, that our fellow-men from the ends of the earth might see and admire the seat of England's greatness and glory—the assembling-place of her people's representatives.

W. H. ROWE.

THE INTERIOR OF THE BANQUETING HOUSE, WHITEHALL.
[THE CHAPEL ROYAL.]

CARVED CAPITALS FROM PARIS.



THE CHAPEL ROYAL, WHITEHALL.

THE INTERIOR OF THE BANQUETING HOUSE.

ALL the world knows the appearance presented by the outside of the Banqueting House, at Whitehall,—the work of Inigo Jones,—but very few know what description of apartment it forms within.

The site of Whitehall was purchased in the reign of Henry VIII., the ancient palace of Westminster having fallen into decay, and the king built upon the void ground, "many distinct, beautiful, costly, and pleasant lodgings for his Grace's singular pleasure, comfort, and commodity."* These occupied both sides of what is now the road, and there was a public way through the palace from Westminster to Charing-cross, by two gates, one called Whitehall-gate, the other the King-street-gate. The character of the buildings was late Tudor, and included galleries, courts, and a banqueting hall. On the 12th of January, 1618-19, the old banqueting house was burnt down, and Inigo Jones was ordered to erect a new one. The first stone of this was laid on the 1st of June, in the same year, and the building was finished in March, 1622.

When reviewing the "Life of Inigo Jones," issued a short time ago by the Shakspeare Society, we mentioned the discovery at the Audit Office of the account of the "Charges in building a Banqueting-house at Whitehall, and of erecting a new Pier in the Isle of Portland, for conveyance of stone from thence to Whitehall." The pier cost 712*l.* 19s. 2d.; and the banqueting-house, 14,940*l.* 4s. 1d.

In that account, the new banqueting-hall is thus described:—

"A new building, with a vault under the same, in length 110 feet, and in width 55 feet within; the wall of the foundation being in thickness 14 feet, and in depth 10 feet within ground, brought up with brick; the first story, to the height of 16 feet, wrought of Oxfordshire stone, cut into rustique on the outside and brick on the inside; the walls 8 feet thick, with a vault turned over on great square pillars of brick, and paved in the bottom with Purbeck stone; the walls and vaulting laid with finishing mortar; the upper story being the banqueting-house, 55 feet in height, to the laying on of the roof; the walls 5 feet thick, and wrought of Northamptonshire stone, cut in rustique, with two orders of columns and pilasters, Ionic and Composite, with their architrave, frieze, and cornice, and other ornaments; also rails and ballasters round about the top of the building, all of Portland stone, with fourteen windows on each side, and one great window at the upper end, and five doors of stone with frontispiece and cartoozes; the inside brought up with brick, finished over with two orders of columns and pilasters, part of stone and part of brick, with their architectural frieze and cornice, with a gallery upon the two sides, and the lower end borne upon great cartoozes of timber carved, with rails and ballasters of timber, and the floor laid with spruce deals; a strong timber roof covered with lead, and under it a ceiling divided into a fret made of great cornices enriched with carving; with painting, glazing, &c."

"The master-mason was Nicholas Stone, the sculptor of the fine monument to Sir Francis Vere, in Westminster Abbey. His pay was 4s. 10d. the day. The masons' wages were from 12d. to 2s. 6d. the man per diem; the carpenters were paid at the same rate; while the bricklayers received from 14d. to 2s. 2d. the day."*

The Banqueting Hall formed but a small part of Jones's design, which contemplated a palace of great magnitude and beauty, but nothing more was done.

King Charles I. was beheaded in the front of the Banqueting Hall, and Charles II. entered it in triumph at his restoration. His speech to the Commons, delivered in this Hall, March 1662, shows that the tide rose here at times,—he called upon them to pass laws for amending the ways, so that his wife might enter the town with decency, and "not find *Whitehall surrounded with water.*"†

In 1691 some part of the palace was burnt down, and a second fire in 1698 (N. S.) destroyed all but the Banqueting House.

Vanbrugh built a house in Scotland-yard (so called from that portion of the palace precincts having been appropriated for the residence of the Kings of Scotland when in England to do homage) out of the ruins of the palace.

It was of this house Swift said,—

> "At length we in the rubbish spy,
> A thing resembling a goose-pye."

Inigo Jones also lived in Scotland-yard.

The Hall was converted into a chapel in the reign of George I., who ordered, in 1724, that the duty of preaching there should be performed by twenty-four clergymen, half of Oxford, half of Cambridge.

It was shut up in 1829, and remained closed till 1837, during which time it was restored and refitted, as we now see it, under the direction of Sir Robert Smirke, for which a very large sum of money was expended. The roof was found to be decayed and worm-eaten to an extraordinary extent, and was therefore wholly renewed. The ceiling, though also of wood, was very sound, and was retained. The pews, of wainscot; the royal closet (seen in our engraving on the west side), and the columns which carry the organ-gallery, were put up at this time. Great inconvenience was found in performing service; the echo was so great that the minister was unable to make himself heard. To remedy this, the lower windows were closed up, but this had no effect. The walls were then hung with drapery ‡ (as shown in our engraving), and the floor carpetted, by which means great improvement was effected.

The ceiling, which is divided into panels by bands, ornamented with a guilloche, is painted black and gilded in parts. The panels contain pictures by Rubens, painted abroad in 1635, in honour of King James I. The northernmost of the three large compartments represents the king pointing to Peace and Plenty, embracing Minerva and routing Rebellion and Envy. The centre compartment shows the king trampling on the globe, and flying on the wings of Justice (an eagle) to heaven. At the south (the altar) end, the king is on the throne pointing to Prince Charles, who is being perfected by Wisdom. For these pictures, in the execution of which Rubens is said to have been assisted by Jordaens, he received 3,000*l.* The effect of them is greatly injured by the loops by means of which they are affixed to the ceiling, and to be seen at all they must be viewed from the south end of the apartment. Van Dyke was to have painted the sides.

The Hall is exactly a double cube, being 111 feet long, 55 feet 6 inches high, and 55 feet 6 inches wide.*

* Malcolm's *Londinium Redivivum.*

* P. Cunningham's "Life of Inigo Jones."

† Malcolm.

‡ 1,400 yards of drugget were used for the purpose.

* The statue of James II. behind Whitehall, is the work of Grinling Gibbons, and was put up December 31, 1686.

CARVED CAPITALS FROM PARIS.

WE add to our former examples of Capitals from the French capital two other specimens of elegant design.

A SUGGESTED LOCALITY FOR THE INSTITUTE OF BRITISH ARCHITECTS.

THE very limited space and indifferent accommodation at present enjoyed by the Institute in their apartments at No. 16, Grosvenor-street, have naturally led to many suggestions: among them the following is, I think, worthy of attentive consideration:—

To take the premises, No. 24, Great George-street, Westminster, adjoining the Institute of Civil Engineers (these can possibly be had at a rental of 300*l.* per annum), to form openings in the party-wall, and have a joint use of the lecture-room (one very well adapted for the purposes of a public meeting): in consideration of this the Institute of Architects to make an annual contribution of books to the library of the Institution of Civil Engineers.

I have reason to believe that such a proposition would be favourably received by the Institution of Civil Engineers, and would be a manifest advantage to all parties.

PAULATIM.

SANITARY MOVEMENT IN OXFORD.—The town-council having asked Mr. Cubitt to recommend a fit person to inquire into the sanitary condition of the city, that gentleman has proposed Mr. M'Dougal Smith for the purpose.

BALBEC.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

AT the ordinary monthly meeting, held on the 16th inst., Mr. William Farrell, V.P., in the chair, some architectural fragments from the ruins of Balbec were produced by Sir Thomas Deane, one of the three vice-presidents of the Institute, who read the following paper on the subject:—

Baalbec, or Balbec, called by the Greeks "Heliopolis, or the City of the Sun," is too familiar to architects and antiquarians to render it necessary that I should detain the meeting with any lengthened description. The city of Baal, or the Sun, is now better known by the Syriac name, "Balbec." It remains in doubt when this city was founded, and though the style of the architecture of the ruins is for the greater part of the Corinthian order, yet the exact period of their erection is not handed down. The building of the Great Temple is attributed to Antoninus Pius, and on several coins of the Roman emperors the Temple of Heliopolis has been struck.

The city is enclosed by a wall encircling the Great Temple, with its courts and fora; a smaller temple, a column, and an unique circular temple, with its exterior entablature sweeping into deep graceful curves, forming concave spaces between detached Corinthian columns, with its walls decorated by niches of peculiarly elegant design. The study of the stupendous ruins of Balbec will well repay the architectural student, whom I refer for ample description to the writings of Pocock, Volney, Bruce, Wood, and Dawkins: the latter visited and measured the ruins in 1751.

The object of my addressing the Institute is to bring to their notice two fragments of architectural sculpture which were presented to me by a gentleman of great intelligence, who visited the ancient city of Balbec — one, a portion of a Corinthian capital; the other, a part of a moulding, with a leaf sculptured thereon. Before I draw the attention of the meeting to the peculiarity of these specimens, I would endeavour, as it were, to fit or prepare our minds by dwelling on some of the details of the Balbec temples.

The Great Temple is 290 feet long, 160 feet wide, has 10 columns in front and 19 at the side. The height to the top of the pediment is 120 feet, the columns are 7 feet 10 inches in diameter, the entablature 11 feet 9 inches high. The columns are of one stone. Volney says "of a white granite, with large shining veins like gypsum." The more ornamental parts were carved out of a coarse white marble brought from a quarry west of the city. Some of the stones employed are of immense size. There are in one part of the foundation three stones, which make in their united length 182 feet by 12 feet thick. In one quarry there remains an unfinished stone nearly 70 feet in length and 14 feet square.

My reason for giving dimensions is to induce a contrast in the mind with the pigmy architecture of our country, with its oft ill-applied column, from 3 to 4 feet diameter. How noble must the temple be whose columns remain to this day in majestic grandeur of double these diameters: let us realise in our thoughts columns nearly 80 feet in height, nineteen in number, at the side of a temple! However, I must not mislead as to great general dimensions being always necessary to produce sublimity. A Greek Doric temple, from beauty of form—beauty as well as greatness of parts,—with obvious simplicity of structure, is universally allowed to be sublime, yet the general dimensions of the Parthenon and of the Temple of Thesus are small. We have it stated, and truly so, by Mr. E. L. Garbett, that "no Gothic building ever possessed a particle of sublimity, unless double the extent and treble the height of an ordinary Doric temple:" here there is sublimity by totally different means.

Sir Joshua Reynolds, in his Discourses on Art, says,—"The more extensive your acquaintance is with the works of those who have excelled, the more extensive will be your powers of invention; and, what may appear still more like a paradox, the more original will be your conceptions." I truly believe in this observation, and therefore urge on all to study ancient art abroad and at home. It is with these feelings I would approach the ruins of Balbec; with these feelings (in this necessarily conversational paper) I lay before the Institute the fragments of sculpture I have alluded to.

In both of these specimens you will discover exalted mind in the composition—a peculiar adherence to characteristic nature—a power of producing effect by simple means, rarely in our day acquired or applied. This, you will perceive, is by an artistic use of the drill. I mean by an artistic use, a feeling for, and knowledge of, art in the workman, which produces that indescribable feeling best expressed by what may be termed the poetry of art.

In all sculpture drilling the points for what is called "bosting" has ever been applied; but in the specimens under consideration the drill has been otherwise used in the formation of foliage, and producing effect by deep shadows and undercutting, but all by a master hand, knowing and feeling his subject.

To elevate our minds to the beautiful in art has been this evening my object. When I consider that the standard I have brought before you is a work executed 1,400 years back, as sharp as the day it was wrought, so natural, so beautiful, my mind turns to the past with wonder—to the present and future, with hope of improvement — an improvement to be attained by the principles I have taken the liberty to put forth; by mutual good feeling—mutual instruction—and teachable minds,—the exhibition by every means, and at all times, to the artisan of the highest models of antique and modern art. The British Institute of Architects, our own with some vigour infused into it—the Dublin Society, a school of design established years before the present schools of design were thought of, now so nobly followed up by Government, disposed to act in the arts, when we are disposed to help ourselves. These united means must bring about a better feeling for the fine arts, so that in the end good taste will be conspicuous in every art and manufacture.

The Corporation of Cork have wisely contributed in aid of the school of design—they wisely look to the future effect of first principles being well grounded. The Corporation of Dublin, so nobly constituted, no doubt will follow the example. I fear that I have digressed, that I have ridden my hobby, the advancement of the fine arts—a love for, and knowledge of which, I trust, ere long, will pervade all ranks of society, and that in ages to come the productions of our time may be looked on with the same pleasure, that I have no doubt you have felt on the inspection of the fragments of Balbec sculpture I have had the honour of laying before the Institute this evening.

A discussion followed.

According to *Saunders's News Letter*, it is expected that the institutes of engineers and architects will be able speedily to obtain some suitable premises, which they can conveniently occupy in common; and we hope that this very desirable end may soon be realised, being satisfied that the non-professional public will often derive much pleasure and instruction when invited to attend the meetings of the institute.

COMPETITION—SOUTH METROPOLITAN SCHOOL BOARD.

IN the month of May last, advertisements were issued for competition designs by the *South Metropolitan School Board*, and between fifty and sixty designs were submitted. The plans were delivered on the 16th of July, and in about two months afterwards my designs were returned to me; but up to this period, through your publication or any other, I have not seen any information as to the building being proceeded with, or who was the successful competitor. But I am informed, upon private authority, how true it may be I cannot say, that the idea of building altogether is abandoned.

Would you oblige me, and I dare say the other unfortunate competitors will be also obliged, by stating if you have heard anything upon the subject?*

I am quite alive to the truth of the remarks which have appeared at various times in your valuable journal relative to competitions, and the great and palpable injustice to which architects so quietly submit, and I would gladly be one in endeavouring to establish a more substantial and respectable footing for the profession.

Supposing, in this case to which I have called your attention, fifty or sixty gentlemen have submitted designs, each of which would take on an average from five to six weeks' labour, and an expenditure of from 5*l.* to 10*l.*, and the committee, for some cause or other, do not proceed with the building, and they consequently return all the plans without selecting any. Is there no remedy? Are we quietly to submit to such a barefaced act of injustice?

Surely there must be some obligation on their part, or at least I understood so, or I should not have been induced to have expended my time and labour in preparing designs; and the obligation I take to be this,—that they make a selection of some one of the designs submitted, and if the author be a competent person, that he should be engaged to carry out the works; but provided circumstances should arise over which they had no control, and the building were not proceeded with, then that he should receive such remuneration according to the usual charges in the profession. But supposing they do not think there is any such obligation on their part, what then—are we quietly to submit?

We might not be able to succeed in law, but we could in equity, and I would gladly subscribe my 5*l.* towards the prosecution of such a suit, to prove to such men that we are not to be treated with greater indignity and injustice than any other class of her Majesty's subjects.

But perhaps I am wrong in this particular instance, although there have been too many such cases, and I should be glad to obtain any information on the subject.

T. S. EDWARDS.

* We have not.—ED.

BUILDING ACCIDENTS.

Islington Sewer.—On Friday in last week two men were drowned in a sewer at Lower-road, Islington, by a rush of water from the bottom of the New River tunnel there, while attempting, against the regulations of the Sewers Commission, to open a communication into the sewer from a house-drain in the course of formation at the King's Head public-house. The sewer itself was a new one, but had been safely cut across the New River tunnel at a lower level, and the sewerwork was at a stand for want of blue bricks. One of the workmen of the commission, meanwhile, had contracted with Mr. Kesteven, builder, to work at the drain, and was so at work when the accident took place. In his evidence at the coroner's inquest, he stated that he did not know where the waterwork tunnel lay, and supposed that he had got beyond it. In course of some boring to ascertain his position the water rushed in, it was believed from the bottom of the aqueduct, the invert of which is supposed to be only one brick thick, and is very old—as old indeed as the New River cut altogether. Being asked by whose authority he acted in this particular instance, the witness alluded to, (Bevan) asserted that he acted on no one's authority but his own,—that Mr. Kesteven had gone to the Sewers Office to obtain leave to open the communication, and that he merely went in "to try and get the thing done." Mr. Forster, the engineer of the commission, volunteered a statement to the coroner and jury to the effect that the tunnel being 250 years old, it might have been unsound, and the company were now constructing an iron tube to go under it; that he attributed the falling-in to an accident, and not to any negligence, although Mr. Kesteven had no authority to carry the drain as far as he did. The coroner said in that case there was no necessity to adjourn. The jury acquiesced, and returned a verdict of *Accidental Death.**

New Chinese Exhibition Building.—For some time past a building of considerable extent for the Chinese Exhibition has been in course of construction near Albert-gate, Hyde-park; and about the hour for leaving off work for the week, on Saturday last, a number of

* By this lamentable accident two widows and nine young children are left totally destitute. An effort is being made to place the widows in a position that will enable them to support themselves and their children. Mr. Henry John, of No. 48, Hatton Garden, has consented to act as treasurer, and will receive any subscriptions that may be offered.

the hands approached one end of the high scaffolding, when their weight, resting upon one of the putlocks, lifted a portion of the brickwork, and caused the scaffolding to fall. Five or six of the bricklayers and labourers were precipitated to the ground, and three persons, seriously injured, were removed to St. George's Hospital.

Newington Causeway.—A coroner's jury, in the case of a man who recently met his death by an accident, alleged to have arisen from the disgraceful state of the road at Newington causeway, has returned a verdict of "Manslaughter against Mr. Pocock, chairman, and the five trustees of the South District Board of St. George, Southwark." The coroner took the recognisance of 50*l.* from Mr. Pocock for his appearance at the Central Criminal Court, and stated that he would accept the recognisances of the other trustees in a similar amount.

Mill near Belfast.—A large building, in course of erection as a preparing (flax) mill, at Beer's-bridge, near Belfast, fell to the ground last week, burying in the ruins a number of workmen, several of whom were killed. The building was roofed in, and the slating all but finished; and no cause could be assigned for the accident, save the supposition that heavy rain of the previous night had loosened the brick-work to such an extent as to unfit it for the support of the beams. The mill was the property of Messrs. Steen and Boyd, and their loss will be about 3,000*l.* Most of those engaged in the lower apartments, having been warned by the noise of the metal beams giving way on the first floor, escaped with trifling injuries. One interim result of the inquest which is being held on the deceased persons, has been the committal of Mr. Magee, the contractor, who built the mill, to prison. The coroner, however, afterwards consented to take bail—Mr. Magee in 500*l.*, and two sureties in 250*l.* each. Another interim arrangement was the appointment of Mr. Lanyon and Mr. Godwin to inspect the ruins, and report. It will be necessary, however, that a clearance be first of all made in the rubbish, which prevents inspection of the walls. The inquest has therefore been adjourned.

Charing-cross Hospital. — We are not a little surprised to observe, from the committee's annual statement of the operations of this valuable institution, that, during last year alone, no less than 3,200 cases of accident and emergency from falls off scaffolds, ladders, buildings, lofts, staircases, windows, excavations, and such like causes, were ministered to by the officials in this hospital, besides a host of other cases. Such an Institution demands our best support.

LLANDAFF CATHEDRAL.

I AM sorry to find any person speaking of the restoration of Llandaff Cathedral in the tone assumed by your correspondent, "H. B.," in your number of December 14th. However, he appears to have either observed with so little attention, or to have reported with so little accuracy, that I think it quite possible that the reputation of the dean and his coadjutors may survive his censure. How any person who "lately had occasion to visit that most interesting spot" could sit down and so completely misrepresent one of the greatest works of modern times, is something which quite passes my powers of understanding. "H. B." "was astonished on his approach to notice the unusual appearance of a gable and cross standing, to all appearance, at the end of a ruined nave; but still too new (even at the distance of half a mile) to bear out his first impression. On a nearer approach, however, it was soon accounted for by a flat roof (added by our 'modern restorers'). Surely, out of the merest respect to external effect, a roof of the same pitch as the gable could have been constructed (however bent the architect might be on spoiling the effect of the new nave internally by a flat ceiling)." "H. B." is an ingenious person, having turned the cathedral right round, and apparently confounded the works of the eighteenth and nineteenth centuries, mistaking the devastations of Mr. Wood for the restorations of Dean Conybeare! There certainly is "a gable and cross forming," not only "in appearance," but in reality, "the end of a ruined nave;" but they are the original work of the thirteenth century (slightly altered in the fifteenth); so that if these be "new" (even "at the distance of half a mile"—a curious standard of novelty), I am at a loss to know what may be "H. B.'s ideas of antiquity. There is also "a gable and cross," "to be accounted for (in "H. B.'s" phraseology) by a flat roof added by our modern restorers;" but they do not "form the end of a ruined nave," but the east end of the restored Lady Chapel. To which does "H. B." refer? As to the latter, you know from my published remarks on the subject that I disapprove of the flat roof and sham gable as much as "H. B.," but the desire "to spoil the effect of the new nave internally by adding a flat ceiling," which he, not very graciously or charitably, attributes to "the architect," exists wholly in his own imagination. There is no "new nave" at all; the nave remaining in ruins, according to the showing of his own first paragraph: the renovation of the eighteenth century affected the choir, that of the nineteenth the presbytery and Lady Chapel. There is certainly no flat ceiling of less than a century's standing, none in any connection with any cross or gable: the Lady Chapel retains its ancient stone vaulting: the presbytery has a modern roof of timber: even of Mr. Wood's choir, the ceiling is, I think, not quite flat, and at all events will not last much longer, if it still exists. It is, indeed, true that I individually very much wish to see a flat ceiling in the nave and choir; but so far is the architect from being "bent on spoiling their effect internally by adding" anything of the kind, that he differs completely from me on the subject; and probably my flat ceiling—Peterborough being the model—would not very much resemble that which exists in the imagination of "H. B."

In his last paragraph your correspondent would almost seem, by the censure with which he concludes, to have attributed the structure of Mr. Wood to the present restorers! I will not ask "H. B." whether he has read what the dean and myself have written on the subject; I will only ask, has he really entered the church whose zealous guardians he has taken upon him to malign?

EDWARD A. FREEMAN

THE LIGHT-TAX ABOLITION MOVEMENT.

NEITHER the Government, in according their warm support to the International Exhibition movement, nor the Industrial Commissioners, in selecting the design of the Great Glass Building, we dare say, calculated on one excellent end subserved by these proceedings, —namely, the concentration of the public attention, spite of the "drum ecclesiastic," upon GLASS. The steady contemplation of the public eye upon whole acres of that glittering and attractive material has naturally begotten a desire to have a few more acres of it spread over the country and distributed amongst them: and they are likely to insist upon it now that they have thought of it,—now that the Government and the grand Commission have presented them with the leading idea, which, by the natural and inevitable laws of psychological association, suggests not only all that is good in glass, but all that is evil in its absence. The movement for the abolition of the tax on window-glass, and through that on light and air, on health and comeliness, on cheerful spirits and on cleanly habits, has fairly begun. May it speedily come to a prosperous issue.

Meetings of a determined character are being held in all quarters of the country; and our present purpose is to notify the occurrence of a few of these as they transpired. At a meeting last week of the inhabitants of St. Anne's, Westminster, held in Dean-street, Soho, it was unanimously determined to petition Parliament for a "total, immediate, and unconditional repeal of the obnoxious tax." At this as well as at every other, all those arguments which have been so repeatedly urged in our columns were rehearsed; but on these we need not now enlarge.

The work is not yet done; and nothing but a determined perseverance in the present auspicious course *will* do. At the meeting under notice, it was also unanimously resolved to urge a refusal of further supplies to Government, should they refuse the total repeal of this odious tax. With reference to the deputation from the Metropolitan Sanitary Association to the Chancellor of the Exchequer, Mr. Nicholay stated that he had that day accompanied the deputation to the Chancellor, and his name (Mr. Nicholay's) being mentioned, the right hon. gentleman stated to him that he had proposed next Tuesday to receive the metropolitan delegates' deputation on this question. He told the Chancellor of the Exchequer that that would be too short a time, *because the organisation was so great and so extensive that it would astonish him.* After entering into a variety of details, it appeared that the meeting was postponed for the present, on Mr. Nicholay assuring the Chancellor of the Exchequer that *if pressure from ithout were wanting, he should have it to his heart's content.* Various meetings, Mr. Nicholay added, were yet to be held in the Tower Hamlets, Hackney, &c.

Since the meeting in St. Anne's, Westminster, took place, a great meeting has been held in St. Marylebone (on 20th inst.), Mr. Nicholay chairman, when delegates attended from Islington, who wore broad blue scarves, on which were traced, in white letters, the words "No Surrender," "Unconditional Repeal." On the hustings were Lord D. Stuart, M.P., Sir De Lacy Evans, M.P., Mr. C. Lushington, M.P., Mr. Williams, M.P., Mr. Mowatt, M.P., &c. &c. Resolutions similar to those voted at the meeting before noticed were here also unanimously passed, contingent refusal of supplies inclusive.

At Bedford, a numerous meeting was held on Wednesday in last week, when resolutions were also unanimously passed, which are formally based, as indeed were all those already noted, on the idea first struck out by ourselves, but now so entirely public property that we are almost ashamed to claim it,—that the window tax is virtually a tax on light, air, and health: petitions to parliament were at once made out, based on these resolutions, and are in course of signature.

At Southampton similar petitions are in progress. At Salisbury, the same, with resolutions in which even stronger references are made to the bearing of the tax on Sanitary Reform in general, and ventilation and light in particular.

A large meeting was held at Bath on the 16th inst., in which no surrender—no modification—but total repeal—was the password, as it has been everywhere else. Here, too, of course, appropriate resolutions were passed by acclamation. One of the town councillors said he had only two ideas on the subject of the window-tax—one was that the tax was a very bad thing, and the other that its repeal would be a very good thing. It had been said that the tax must have originated in the regions of darkness: whether this was so or not he would not undertake to determine, but they all knew it came from a *Pitt*. They might remember that a poor but witty fellow, who was obliged to block up some of his windows when the tax was put on, had them painted in the shape of the back of a book, and labelled them "Pitt's Works, Vol. I.," and "Pitt's Works, Vol. II." Now he wanted no more of Pitt's works—no modification of the tax—all or none—"the bill, the whole bill, and nothing but the bill"—a total and unconditional repeal of the window-tax. Petitions were also determined on.

The citizens of York held a meeting on the subject on Tuesday week, and meetings of a similar character have been held in several other towns; but our space and time are both up for the present.

TENDERS FOR THE BRENTWOOD LUNATIC ASYLUM, ESSEX.—Mr. Editor, what do you say to the following?—

Smith and Appelford	£80,420
Kirk and Parry	74,126
Sanders and Debham	73,500
Trego	71,676
Hoof and Hill	68,545
Harrison	67,972
Jackson	67,651
Lucas, Brothers	66,809
Curtis	61,840
Piper	57,980
Myers (accepted)	57,920
Mortimer (withdrawn)	43,875

A. Z.

RAILWAY JOTTINGS.

A wooden bridge, covered with gas tar, on the Sheffield and Rotherham Railway, caught fire lately in consequence of the contents of the fire-box having been thrown on the bridge. ——The rate on the Eastern Counties Railway, in the parish of St. Matthew, Bethnal-green, comprising 67 furlongs of line, with stations, has, after a sharp contest, been adjusted at 5,000*l.* per annum.——Messrs. Fox and Henderson have contracted for the new station of the Oxford Branch of the North-Western, at Oxford, to be opened in May. The station will be 100 yards in length, and will be entirely built of glass and iron. A committee from London is expected at Oxford in a few days to decide on the locality of the station, which it is expected will be in the Botley-road, near the Castle. The tender to build it on the "Crystal Palace" plan, modified to suit the peculiarities of railway requirements, was nearly 20 per cent. lower than any other it is said.——The site of the great central station at Birmingham has been marked out so far by the plans and estimates of rails and crossings already prepared. The junction of the Midland with the London line has been completed, and on Wednesday some part at least of the Derby passenger traffic was to be brought up to the London station.——The Hereford and Shrewsbury line is on the way to realization. The tunnels will be begun first: these have been surveyed and all marked out: four shafts of seven feet diameter will be sunk at Dinmore-hill. The contractor, on applying to Mr. Arkwright as to where he was to quarry the stone, was granted permission to do so wherever he could find it most convenient for his purposes. The contractor will commence simultaneously at many points of the line. The sub-contractors will sign their contract in the course of a week or two; so that, in the beginning of February, the works will be in operation throughout the line.——The works on the Londonderry and Coleraine line will commence immediately. Mr. M'Cormick, the contractor, has purchased Lisahally House and lands, and yesterday Mr. George Green, his agent, bought the farm nearly adjoining it, at 930*l.*, at Walters's Auction Mart. This farm is held under lease, renewable, at the rent of 14*l.* 6s. 6d., and contains 32 acres of land. The first fruits of the railway formation here, as elsewhere, is the enhancement of the value of property in the vicinity, this farm having been sold at about twenty-eight years' purchase.——The Prussian minister of commerce has concluded an arrangement with the Prussian railway companies, by which all Prussian workmen and *industriels* going to England to visit the "world's fair" will be conveyed in second-class carriages at third-class fares.——A company is being formed at Madrid to convey our Spanish visitors to the great gathering of the nations. They are to pass through France, and to stay three days in Paris. Their residence in London is to be about a fortnight, and the expense of the whole trip will not exceed from 1,000f. to 1,200f., according to *Galignani*.——Mr. F. E. Colegrave, of Brighton, has patented improvements in slide-valves, in causing the driving-wheels of locomotives to bite the rails, and in supplying water to steam-boilers. For causing the wheels to bite the rails, the patentee proposes to convey a stream of heated air against the rails, immediately in front of the driving-wheels, which, in damp and slippery weather, it is said, would be almost instantaneously dried; and also to connect together by a band the leading, driving, and trailing wheels, securing cohesion between the wheels and rails. The patentee also proposes to heat the water before it is conveyed to the boiler, by causing it to pass through water spaces on three sides of the ash-pan.——Mr. J. W. Hoby, of Blackheath, has taken out a patent for a method or methods of securing rails upon longitudinal or transverse bearers, by curved or angular lips on one side, and by bolts and nuts passing through one of the flanges of the rail on the other; or by curved or angular dogs, and bolts and nuts, or by means of ribs or studs, and keys, on the other; the application of chucks along each side of a line of rails, either with or without keys, for securing rails to sleepers; a method of constructing the troughs of longitudinal iron trough-sleepers for holding and securing the rails so that one side of each trough shall fit to and support one side of the rail placed within it, and that a key may be introduced on one side the rail; for a method of constructing stretchers of hollow iron, and railway keys, of bent and curved forms, of metallic tubing, filled with wood; and also for an application of a combination of rollers or dies for forming strips of sheet-iron for the purpose.——Mr. J. C. Hadden, of Bloomsbury, has patented some improvements in the construction of railway carriages and wheels. The sides and end pieces of the under framing of railway carriages are to be constructed with bars or plates, the ends of which are bent so that, when placed together, the bendings may lap round each other, in such manner that the corners of the carriages shall be double, or of two thicknesses of metal. The transverse and diagonal ties are constructed with bars bent so as to hold the ends and sides together. The framing of the sides and ends of carriages are constructed with diagonal bracings, or struts, cut flush with the other timbers of the framing. The external covering of the sides and ends of the bodies are placed against or upon the framing, the several parts of which are made flush with each other, for the purpose of securing them in position. The improvements in railway wheels are thirteen in number, all based on constructions previously patented.——Eighty railway bills have been lodged in the Private Bill Office, having thus surmounted the first two stages of parliamentary initiation. "The enterprise of the country," says the *Railway Times*, "can in no way be considered as having seceded from railway extension or improvement. The list of bills shows that a greater degree of caution than was wont is settling itself down upon railway management, and that is as good a symptom as we could desire to see."

NOTES IN THE PROVINCES.

A NEW school has been built at Milton Ernest, and was opened on the 2nd inst.——Some improvements are being made in High-cross-street, Leicester, by the pulling down of old houses, and the erection of new shops with plate glass fronts, &c.——It was proposed to erect a bridge over the Cam, near Fort St. George, but some obstacles have been thrown in the way of such an application of the money intended to be devoted to the purpose.——The Northampton Mechanics' Institute has now a library of 10,000 volumes, and an income of upwards of 200*l.* a year.——On 1st inst. a new Baptist Chapel was opened at Ryde. The building is capable of seating comfortably about 250 persons, and has been reared at the cost of about 400*l.* of which 200*l.* have been collected.——The design for providing church accommodation for the Haven-street district at Ryde, has long been contemplated. A gentleman has, within the last few days, made to the Rev. W. S. Phillips an offer of one hundred pounds towards the building, with an intimation of a probable contribution in aid of the endowment. It is proposed to erect a small church capable of holding a hundred persons—all the sittings to be free. A site for church and burial-ground has been promised by Mr. T. W. Fleming. The work will be commenced early in the spring, if a reasonable prospect of completion be afforded. ——A meeting was held at the Independent Chapel, Parchment-street, Winchester, on Thursday week, to commence a subscription for a new chapel. The Rev. W. Thorn announced subscriptions from the Rev. E. T. Prust, of Northampton, of 1,000*l.*, and from himself one of 500*l.* Several other subscriptions, varying from 50*l.* to 5*l.*, were promised, and a committee was formed to collect subscriptions. The total expense of a new chapel, and a British School adjoining, it is supposed, will reach 3,000*l.*——It is understood that the Dean of Salisbury has liberally undertaken to complete the works at the cathedral at his own expense.——The new National School-rooms, at Wribbenhall, Worcestershire, the site for which was given by Lord Ward, and the building of which cost more than 500*l.*, raised by voluntary contribution, were opened on Wednesday week. They at present accommodate one hundred and twenty-three children.——A mural tablet, bearing military emblems and inscription, has recently been erected in the chancel of the parish church of Prees, in the county of Worcester, to the memory of Major-General Clement Hill, who died at the Falls of Guersoppa in 1845.——On Tuesday in last week, the ceremonial of consecrating the newly-erected church of Allington, near Amesbury, Wilts, was performed by the Bishop of Salisbury. The new edifice is, we understand, an exact copy of the original structure, which had fallen into decay. It is erected of flint, with stone dressings, and consists of a single aisle and chancel, with a battlemented tower on the south-west side, which is surmounted by a gilt cross, and contains a peal of three bells. The interior of the church is of the most simple character. The aisle or nave is lighted by two windows, containing merely a single mullion dividing the lights, which are cusp-headed. The roof is of open woodwork, stained to imitate oak. The chancel (which is paved with Minton's encaustic tiles), is separated from the nave be a low arch and a small wooden screen, and contains several windows,—those on either side being of the Early English character, while the east window is in the Middle-pointed or Decorated style.——A Plymouth tradesman has succeeded in making cast-iron horseshoe magnets, to lift 150 lbs., at a cost of 30s. each.——At the Radnorshire Epiphany Sessions, it was resolved "to consult some eminent engineer as to the desirability of adopting wood or iron columns" before proceeding to repair the Radnorshire half of Glasbury bridge, which has fallen into a state of decay. At same sessions the chairman remarked that some unfounded reports had got abroad respecting the safety of the new chain bridge which had recently been erected at Disserth. Mr. Davies, Moorcourt, was passing over it a short time since, in his carriage, when one of the chains broke. Mr. Ladmore was bound by his contract to keep the bridge in proper repair for seven years.—Mr. Davies said he had examined the piece of chain which had been broken, and it showed a most defective state of the iron. It was just that sort of defect which had shaken his confidence as to the rest of the fabric.—The County Surveyor said he had thoroughly examined the bridge, both before and after its erection, and was unable to detect any flaw in the iron. Now, that the bridge was painted, it would be almost impossible to perceive any flaw, even if it existed. He believed the bridge now to be perfectly safe.—— A grant of works of art, including a large collection of engravings, casts of sculptured ornaments, &c., has been made by the Board of Trade for the use of the drawing-classes in the Mechanics' Institution at Liverpool.——The first stone of St. Augustine's Church, in the parish of Edgbaston, Birmingham, was to be laid on the 16th inst.——The Staffordshire Potteries are overdone with orders, and a considerable advance has taken place in the prices. The foreign orders are more extensive than they have been for some years, and the general business is excellent.——In the Sheffield Council last week a committee was appointed to inquire as to erecting a municipal hall, which, besides accommodation for the council, should contain a large room for public meetings, &c.; the committee to have power to advertise for sites and consult with architects. The mover of the resolution said that the rent they paid there was 190*l.* per annum. That represented the interest on a considerable sum of money at a low rate of interest. It had long been felt that a public hall capable of containing 3,000 or 4,000 people was much wanted. It did not appear that private enterprise would suffice, for a meeting was held some time ago at the King's Head, and a majority of those present appeared to have been architects and solicitors. The mode of obtaining the funds would not be by any special rate, but by drawing money from the overseers out of the poor-rate as the building proceeded, or the raising of the funds might be spread over a greater number of years.——Morton Church, which has been rebuilt by general subscription, and the whole work completed in five months, was re-opened on the morning of New Year's-day. ——The committee appointed at Bradford on 26th November last, respecting the enlargement or re-building of the parish church, have engaged the services of Mr. P. C. Hardwick, and his report of the present state of the fabric and the measures required for its restoration and for increasing the accommodation of the

church, has been presented.——Keeping pace in the sanitary movement, the proprietors of the Otley Waterworks have recently had their storage reservoir reconstructed. It is now sufficiently large to hold 200,000 gallons. Mr. Wm. Maston, of Otley, was the contractor, and Mr. Johnson, of Wakefield, the engineer.——Two large reservoirs, capable of holding 18,000,000 gallons, have just been completed on Rombles Moor, for Mr. T. Horsfall, of Burley Hall, for the purpose of supplying water-power to several woollen and corn-mills at Woodhead and Binley. A correspondent says, notwithstanding the unfavourable nature of the ground, and the necessarily heavy and substantial character of the embankments, &c. the works have been executed at a low cost, each cubic yard of storage room costing under 1¾d. The works have been executed by Messrs. Parkinson and Roberts, contractors, Wakefield, under Mr. J. McLandborough, of Otley.——The foundation stone of a new church, in the newly-formed district of South Ossett, parish of Dewsbury, was laid on 1st inst. The church, which is of cruciform design and of decorated style, is to be built by subscription, aided by grants from the Ripon Diocesan and Incorporated Church Building Societies. The estimated cost is about 2,000*l*. The church is to contain 600 sittings, more than two-thirds free. Messrs. Mallinson and Healey, of Bradford, are the architects. The site (an acre of land) was given by Mr. Joseph Thorns.——In the village of Carlton, near Selby, Lord Beaumont has built a school, to accommodate 120 children, where that number are taught history, cyphering, writing, and geography, for 1d. per week each, including books and stationery. His lordship also rents another room for an infants' school, containing sixty children, taught upon the same terms. By far the greater number of children in his lordship's schools are Protestants.——At the North Yorkshire sessions, lately, the chairman said, four years ago an application was made by the inhabitants of Stockton for assistance in widening the bridge. The North Riding then voted 200*l*., and the county of Durham 200*l*., provided the inhabitants of Stockton and the district would also contribute 200*l*. By Act of Parliament, the Riding was not bound to widen the bridge, but the magistrates were willing in this case to render their assistance. The money was not raised, and nothing had been done. The Court, however, still express a willingness to abide by the original offer.——The town of Bedford has been thrown into a state of excitement by the service of writs on two of its aldermen for penalties of 100*l*. each, incurred, under the Bedford Improvement Act, for acting as commissioners, being interested parties, as shareholders of the Gas Company, and thereby contractors with themselves for lighting the town with gas.——The unusual mildness of the season has enabled the contractors for the new "People's Hall," at Colchester, to make rapid progress in the erection of this building. It was found necessary to excavate to a considerable depth for the foundation on the east side, at the north and south ends. At one part, a Roman tassellated pavement was found, 13 feet from the surface: it was covered with bones, human and animal, Roman tiles, burnt earth, and a few antiquities, none of any great value. It is anticipated that the building will be completed in less time than the terms of the contract allows.—— For the acceptance of the gift of a museum offered to the Winchester Town Council by the trustees of the County Museum, 361 burgesses voted, and against it only 13. The next question will be the selection of a proper site. The vote of the burgesses was in fact one for the adoption of "the Public Libraries and Museums Act," so that we hope soon to see a good free library as well as museum erected, not only in Winchester but in other and rival towns in that quarter of the country.——The interior of St. Mary's Church, Andover, has, through the munificence of Miss Gale, been improved, by the removal of the plain glass from two windows facing the northern and southern aisles, and the substitution of two richly stained memorial windows. Each window is divided by a jamb into two lights, with circles over, containing the arms of Miss Gale, and also those of the late Dr. Goddard, for many years vicar of this parish.——The new chancel of the parish church of Steeple Barton, just rebuilt at the expense of Viscount Clifden, impropriator, was opened on Sunday last week. The eastern window is of three lights, in the decorated style; the two south and the one north windows are square-headed; the door is of oak; the floor of the chancel is composed of lozenge-shaped tiles (red and black), from the Staffordshire potteries. Preparations are making for pulling down and rebuilding the body of the church.——The Tipton factory iron-works, which have been idle for the last eight or nine months, are likely to be again put into full operation, by Messrs. Barrows and Hall, of Bloomfield. Many of the men who worked at these works have been out of regular employment ever since.——"A Lady of Birmingham" complains, in the local *Journal*, that the want of good flagged parapets and stone (not pebble) crossings is so palpably and disagreeably apparent during bad weather in Birmingham, that comment is needless. In some large towns, footways before all property must be flagged before it can be let; consequently such towns always present a neat and cleanly appearance. "In the name, then, of the ladies of Birmingham," adds the complainant, "I appeal to 'the powers that be,' to go for an act to abate the abominations I have alluded to."

GLASSY TILES, BRICKS, PIPES, AND PAVEMENTS.

THE idea of glass tiles and bricks, or even pipes and pavements, is not quite so new, perhaps, as the "ferro-vitreous" order of construction, but the following attempt is at present being made to reduce that idea to a more widely practicable and cheaper form than it may have hitherto assumed. A specification of the patent has been lodged during the week before last, and is thus reported on by the *Mechanics' Magazine*:—"J. Connop, Hyde-park, gentleman: For improvements in melting, moulding, and casting sand, 'earth, and argillaceous substances,' for paving, building, and various other purposes. Mr. Connop observes that he has discovered that part of his invention which was to have been included under the words 'earth and argillaceous substances' does not possess sufficient utility (*query*, novelty?) to warrant his claiming its exclusive use; and that it is his intention to apply for leave to enter a disclaimer thereof. He then goes on to state that, although the melting of sand with various fluxes is a well-known operation in the manufacture of glass, still the application of this process to the formation of bricks, slabs, steps, mantle-pieces, pipes, tubes, inverts, and such like articles adapted for paving and building purposes, and for the conveyance of liquids under streets and through land, is new, and constitutes, in fact, the invention claimed by him. The methods of, and apparatus employed in, such melting, casting, and moulding together the materials used (which are of the cheapest and commonest description), are in every respect identical with those practised and applied in the manufacture of coarse bottle-glass; but as, in this case, transparency is by no means an object, the operation of 're-fusing' is dispensed with. While in a heated state, the articles (moulded into the desired forms) are placed in annealing ovens of the ordinary circular construction, with sand or cementing matter between them, to prevent them coming in contact. The temperature of the oven is then raised to a white heat, after which it is gradually reduced.

Mr. Elliott, of Blisworth, has obtained a patent for making vitrified bricks, tiles, &c., of limestone, chalk, clay, old furnace cinders, and other plastic materials, which will melt into a liquid similar to iron, and will bear to be carried in a ladle to a sand or cast-iron mould, and in about two minutes, when set, may be taken out of the mould, and stacked one brick upon another while hot, so that they will retain the heat a sufficient time to anneal and become strong and hard. The cast-iron mould must be made to take apart. The cost of melting (by hot air blast) and moulding, reckoning coke at 30s. per ton, and coals at 15s. per ton (using two-thirds of coke to one of coals) will be about 5s. per ton. Building bricks, 17s. 6d. per thousand; paving ditto, 10s. per thousand; tiles and pipes, 6s. per thousand. The raw material requires no further preparation, previous to melting, than drying, which may be accomplished by the aid of the waste heat from the furnace. The cost of the material will vary according to situation. The stones may be broken by the engine. The material, when fused and broken, will be worth at least 4s. per ton for road-making, as it will be equal to the hardest stone, easily broken, and impervious to moisture. In establishing a new manufactory this system is decidedly the least expensive, particularly if a steam-engine, water-mill, or other power to generate blast be already on the spot, as very little building or ground is required, a large stock in hand not being necessary, as any article can be made to order at any season of the year. The cost of the raw material and fuel will of course vary considerably in different localities; but as it will in most situations require carting, the furnace may be erected contiguous to a canal, railway, water-mill, or other convenient situation. The cost of a steam-engine and blowing machinery will be about 130*l*.; hot air oven and furnace, about 60*l*. A trial may be easily made at any iron-foundry, as the material may be put into the furnace with the iron, and will be ready for moulding as soon as the iron is run off, which is sure to be at the bottom, being the heaviest. The greater the quantity the more fluid it will run, and the better the sample will be. Gradual cooling or annealing is absolutely necessary.

IPSWICH GRAMMAR SCHOOL COMPETITION.

I BEG you will give me the opportunity of saying a few words on the above subject, as I am personally named in your last number as the unlucky premiated competitor—painful pre-eminence!

In my desire to act in good faith, I was careful that no member of the committee should see my drawings before they were sent in, and I have used no personal solicitation whatever: to the truth of this I pledge my word and honour.

Aware of the importance of executing a work of this kind, I spent much time and study in preparing my design, and I cannot understand that the fact of my being a resident of Ipswich should deprive me of the chance of success. My calculations of the cost are based upon considerable experience of such work in this locality: upon this I have staked my reputation, and am prepared to abide the consequences should I be called upon to get a contract for the execution of the work.

I trust the affair altogether may be another inducement for the more influential to discountenance architectural competition entirely.

The fact of fifty-two architects having entered the list, to scramble for twenty-five guineas (a prize so inadequate to the requisite labour), and the subsequent discussions, can have added little to the public respect for the profession. FREDERICK BARNES.

Ipswich, Jan. 22, 1851.

SIR JOHN BARROW'S MONUMENT, ULVERSTONE.

THE following description of the tower is extracted from the present number of the *Nautical Magazine*:—

The plan of the tower is circular, with a spreading base, the general form being similar to the Eddystone: the lantern, however, in this case is of the same material as the general structure, and forms a consistent architectural feature.

The structure is based on the solid limestone rock, of which the Hoad Hill is composed, and which was found immediately under the turf at the summit.

The ring immediately above the surface is 150 feet in circuit, being in wrought stone, and forming a set-off or base, two feet in width, from which the surrounding panorama, one of the most beautiful in England, may be contemplated in all directions.

The thickness of the wall at the surface is twelve feet six inches, intersected with a dry chamber five feet at the base. The wall diminishes in thickness from twelve feet six inches to two feet at the cornice, which is formed of massive wrought limestone.

The whole of the lantern and dome is formed

of the same material, being wrought within and without.

The steps, the door, and window-jambs, the several rings or set-offs, are all in the durable wrought limestone of the neighbourhood. The general walling is in the same stone, and hammered to a sufficiently correct form. The lime of the mortar is from the same material, and set so hard that, as the whole is compactly built (every stone being completely bedded in the mortar, and every joint completely flushed or filled), in a short time the walls will form one thickness, of a most strong and lasting character.

Probably no stone and mortar with which we are acquainted is better calculated to resist all influences of weather than that of Furness, and this monument bids fair to stand as lastingly to record an event of the age as any in the island.

The interior is approached from due south by a wide flight of steps, and over the entrance door is cut in bold relief the words:—

In honour of Sir John Barrow, Bart.
Erected A.D. 1850.

The saloon or principal floor is elevated about 7 feet from the summit of the hill, thus furnishing a basement beneath.

This apartment is 18 feet 9 inches in diameter, having deeply recessed windows to the cardinal points, the view from each of which can be scarcely equalled either for sublimity or variety of beauty. A stove and range are formed in the recess of the west window, and a circular pedestal, with circular shelf-table, will mark the centre.

The several floors and lantern are gained by a solid flight of stone stairs, protected by an ornamental iron balustrade, cast on the spot from the valuable ore procured from the base of Hoad. The pattern is of the 15th century, and each exhibits the initials J. B.

Iron girders form the skeletons of the several floors (the whole being fireproof), and the visitor, while winding the surface of the interior of the cone, is cheered by an occasional peep from the several windows with which the sides are pierced, and reminded of the reward of the beautiful prospect that awaits him at the summit.

The interior of the lantern is 9 feet 4 inches in diameter, and perforated with eight circular openings: the same number of pilasters support the entablature and dome: around the interior are graven the words *Soli Deo Gloria.*

A flag-staff of due proportions will be securely fixed to the base and cornice of the lantern, from which the flag of the nation—a line-of-battle ship's union jack, which, together with the flag-staff, was presented by the Lords of the Admiralty as a mark of their respect to the memory of Sir John Barrow—wafted by his native mountain breezes, will announce to generations yet unborn, that the day of the birth of true greatness excites a nation's joy, while that of his death is felt with a nation's regret; and the tower beneath will stand as a monument of the events of a life passed in the service of his country, and extending over every hemisphere, honoured and appreciated by all classes of his fellows.

HALTING PLACES, &c.

It appears to me that before giving a new license to public-houses (already too numerous), or before granting a renewal of any license already granted, the magistrates should make the maintenance of a fit and proper convenience a condition of the license. In many cases publicans have thought fit to abolish these conveniences altogether: they are as necessary to decency and to health as their absence is productive of nuisances being committed and health impaired. The paving boards, again, of the different parishes can be at no loss to find suitable places for their erections: they can be altogether screened from view. Look at the present population of London—the accession of foreigners that may be expected this spring: one of two things must occur, *i. e.* either decency outraged or these proper and necessary appendages put up. As regards foreigners, I believe that the establishment of *cafés*, or a superior description of coffee-shops for the sale of the beverage "that cheers but not inebriates," would be a good speculation.

A District Surveyor.

"Quondam" should write to the Metropolitan Commissioners of Sewers about "halting-places," instead of to the Commissioners of Woods and Forests. The Sewer Commissioners have the legal authority to provide such places, as appears by your reports of their proceedings. If they were to take the matter up with a little vigour now, they would confer a great boon on the metropolis. Those who know the habits of some of our continental neighbours may be assured, that if they do not find "halting-places" prepared for them, they will scruple little to "halt" wherever it may be convenient to them to do so; and if our police interfere with them, they may reasonably enough answer,

Necessitas non habet Leges.

On this subject, the places called "Mews" offer frequent and easy opportunities for the accommodation sought. If at the entrance a space were compoed, and a hand pointing inward were painted on it, the public would quickly comprehend the meaning. In Glasgow, and perhaps elsewhere, the dissight of houses opposite to these "Mews" is effected by a wall screen: the inside face of these screens, where existing, might always be made available for the object sought. S. L.

LANDLORD AND TENANT.

LIABILITY OF TENANT FOR INJURY BY FIRE.

In the Court of Chancery on the 18th January, a petition was presented, *Ex parte Skingley*, under the following circumstances. It appeared that the testator had left a house to his son, who had become a lunatic, subject to its being kept in good tenantable repair. The house having been accidentally burned, a question was raised as to who was the party bound to rebuild the house. On the one hand, it was contended for the party entitled to the estate in remainder, after the death of the lunatic, that the proceeds of his life estate should go towards the rebuilding the house; and, on the other hand, it was argued for the next of kin of the lunatic, that the expense ought to fall on the person entitled to the estate in remainder.

The Lord Chancellor, in giving judgment, said there was no doubt that in a case of a covenant in a deed, to keep a house in tenantable repair, the party entering into the covenant would be liable to rebuild a house which had been accidentally burnt down. The statute of Anne, which had been referred to, was merely passed to put an end to the custom which then existed, obliging a man in whose house a fire originated to make good the loss; but the statute had no relation to contracts, or agreements between parties. In the present case the will gave the lunatic an estate for life in the house upon condition that it should be kept in tenantable repair. Under that clause his lordship said he was of opinion that the tenant for life was bound to rebuild the house. If, however, the next of kin desired it, he would direct the question to be tried at law, although he had no doubt himself upon the point.

Harbour of Refuge at Redcar.—A project is on foot for forming a harbour of refuge and docks at Redcar. Application is to be made to Parliament in the ensuing session for an Act to enable its projectors to carry their plans into effect. Two ledges of rock, called the "Salt Scar" and the "East Scar," enclose between them an immense bay, and run quite out into the deep water. According to the plans of the new harbour, it is proposed to erect the piers on these rocks, and enclose within the sea walls a capacious low-water harbour of not less than 510 acres in extent. The depth within the harbour, and at its entrance at low water, will be 30 feet; and if completed, it will be, without exception, the most capacious harbour in Great Britain—far surpassing that at Kingston. In consequence of the rocky foundation being provided by nature, the expense of forming the harbour will be comparatively small. The extreme mates, including docks of about 10 or 12 acres in extent, do not amount, it appears, to more than 350,000*l.* It is estimated that the foundation afforded by the Scar Rock will be equal to a saving of about a million of money.

Books.

Sanitary Reform: Model Town Dwellings for the Industrious Classes. By W. Wigginton, Architect. London, Weale; Edinburgh, Blackwood. 1850.

"Homes are the manufactories of men, and influence a growing nation: the importance of improving these homes, then, is at once seen. Perfect men come not forth from ill-arranged, ill-ordered dwellings." Mr. Wigginton takes this paragraph, written by us some time ago (a paragraph that we have seen with pleasure printed and repeated in many quarters), as the text of his discourse, and, moreover, makes so many acknowledgments of the endeavours of The Builder to promote sanitary reform, that it would be almost ungrateful if we omitted giving his book a good word in return. He has, however, a safer claim upon us. It shows much earnestness and right feeling, and cannot fail to be useful. It treats of a matter wherein there is much to be done, and we cordially recommend it.

"By rendering the working man's dwelling *really* his *home*," says Mr. Wigginton, "by giving him comforts which he cannot find elsewhere — we rescue him from the contamination of the pest-house, and plant in his breast the purer and better affections of our nature. This is almost out of the power of education to do solely: it requires the soil to be in a manner prepared to receive the seeds of knowledge—and this can only be done by giving them *sanctums* in their own dwellings. We should not hesitate to throw down any obstacles that may obstruct our progress—we should overcome every thing which may tend to check these mighty improvements. If the counties could be induced to act concurrently in this and other matters of social improvement, a vast impetus would be given to measures of social regeneration, now contemplated by the Legislature.

It is one of the best signs of the times to see the working men—many of them—struggling to improve their social condition. These efforts are some of the most gratifying results of the diffusion of useful knowledge. The wants of the poor have been hitherto entirely overlooked. This was a great social evil, and had a strong tendency to aggravate all the mischiefs resulting from the absence of proper sanitary measures. It is another gratifying sign to see them striving to obtain *property*—to see them aspiring to a *higher station*, and to see them striving to *fit* themselves for that advancement, by that which *alone* gives one man superiority over another—*intellectual wealth*—the wealth of the *brain*—the product of that one talent which is given to all, to be used by all, to the glory of Him that gave it. This is the most gratifying, inasmuch as it is the forerunner of improvements in their eternal as well as temporal welfare."

The plan for town dwellings which he gives, has several good points in it, and is set forth in drawings to a quarter scale.

Useful Hints on Ventilation. By W. Walker, Engineer. Manchester, Parkes; London, Simpkin and Marshall, 1850.

The title of this work (a small book of 128 pages) is not a misnomer. It contains many useful hints. With respect to ranges of cottages in the vicinity of mills and factories, the author says their contiguity to the steam-engine furnishes a ready means of supplying them, at small expense, with abundant quantities of fresh, warmed air. "Below the ground level of a row of cottages, a horizontal trunk or shaft for fresh air should be constructed; made impervious to wet, either by drainage or by water-tight cement, and its ends protected from the intrusion of small animals and vermin by wire-gauze or perforated zinc. At that end of this shaft which is nearest to the engine, a chamber should be formed, filled with pipes or other heating-surfaces, with cocks to regulate their temperature; through which chamber air should be propelled by a fan, screw, air-pump, or other forcing instrument, worked by the engine. From the top of this horizontal trunk or shaft, vertical shafts should be carried straight up, one through each cottage, divided horizontally at the ceiling of the lower rooms into two parts—the lower part communicating with the spaces between the joists by means of openings left in its sides between the ceilings

and floors. By using these spaces as horizontal air-flues, air may be easily conveyed under the floors to that side of the room which is opposite to the fire-place, where it may be allowed to enter the room through an opening made either in the floor or skirting (the latter is preferable), at which a sliding plate should be fixed, to regulate its quantity. The upper part of the shaft should have openings in its sides communicating with all the rooms, for vitiated air to escape at the side of the room opposite to that by which it enters. By these means a complete system of warmth and ventilation would be established through a long row of cottages; and if the plans were laid before commencing building, it could be executed at very small expense. The shafts and air-flues should be arranged by a judicious and experienced ventilator in such a way as to require scarcely any more materials than are required by existing plans of construction,—the main horizontal air-trunk and hot-chamber being the only additional items of builder's work. The power requisite for driving the air would be so little as scarcely to be felt by a large engine; and the heat in cold weather is obtainable, without cost, from the waste steam, by arrangements which have already been most successfully carried out."

"The method of ventilation by power is, unquestionably, the best that can be adopted, wherever there exists an engine for other purposes, or where the amount of ventilating duty to be performed is sufficient to justify the employment of a small one for that express purpose. Its effects are sure and infallible: any amount of air may be driven by it with certainty in any desired direction, and warmed, when the weather requires it, to any degree requisite for human comfort. The moderate cost at which steam-engines can now be supplied, is a material consideration in favour of ventilating by power. In some recent cases, a very simple form of direct-acting engine has been applied to this special object with success and advantage."

A suggestion is offered whether better provision might not be made for carrying off smoke and vitiated air than has been usually attempted, and without great increase of cost. He suggests a square, round, or oblong chimney, large enough for all the smoke of a house to be carried up through its centre, where the walls intersect each other; or, in small tenements, in the centre of one side. "Let it be wholly or partially surrounded with ventilating flues of egress from the various rooms, and carried up, say eight or ten feet above the ridge. Let all the grates be of the register kind (or of the ordinary kind, furnished with a tightly-closing Wilson's chimney-valve), opened only when in use; and let their chimneys be carried up straight to within a foot of the cornices of their respective rooms, at which point let them each turn off, at an angle of 45°, upwards into the main chimney. Close under the cornice over the grate, fix an Arnott's valve or sliding regulator, leading into one of the egress ventilating flues: a door should be left at the bottom of the central main chimney, for cleaning. By this plan, which assimilates the chimney to that of a factory on a small scale, the ventilating flues will be rarefied by the waste heat of the fires; and if we suppose the kitchen to be in one of the lower rooms, this rarefaction will be constant. The divisions may be of stout sheet-iron, or of slate. The height given to the chimney and egress flues will, it is intended (the latter being rarefied on one side by the former, and assisted by proper ingress flues), ensure the draught of them all and that of the fires; and in buildings of superior class, that portion of the stack appearing above the roof, might be made a prominent ornamental feature, susceptible of the highest degree of architectural embellishment. In buildings of a lower class, it might be left comparatively plain, in which case it would still have a more respectable appearance than those heterogeneous assemblages of pipes, elbows, and chimney-pots, various in shape, upright, oblique, zig-zag, and askew, which now present a ridiculous contrast with noble architectural façades, and disgrace some of the best situations in the metropolis. The additional materials required would be small, and compensated by the beneficial results of freedom from smoke and improved ventilation."

The writer suggests that earthenware tubes might be used so as to give to each room a chimney and egress air-channel without occupying more space than at present. "The double tubes might be formed into easy curves while in the plastic stage of manufacture, so as to allow them to pass each other on the different floors. In a dwelling three stories high, for instance, consisting of six rooms, or two dwellings of three rooms each, the whole of the six chimney-tubes and ventilating flues may be carried up in one tubular stack: the tubes, as they proceeded upwards, would be firmly tied together and secured by the floors, and at the top, outside the building, might be held together by an iron hoop, concealed by an ornamental moulding. In the two lower stories, the egress-openings would not be in the centres of their respective chimney-breasts; but as they would each require a valve or sliding-plate with a frame of iron or brass, another and similar frame might be fixed at an equal distance on the other side of the centre line. The hollow spaces that would be left under the elbows should be filled in with brick-work, and the front and sides of the whole mass plastered, which completes the chimney-breast all the way up."

With respect to the "air-syphon" Mr. Walker states that his experiments wholly disprove the opinions entertained by Dr. Chowne.

A Practical Treatise on Benefit Building Societies, &c. By WILLIAM STONE, Attorney-at-Law. Maxwell, Lincoln's-inn. 1851. THIS treatise embraces the whole subject of building societies,—their origin, constitution, and change of character, and the superiority of permanent over terminating societies; also the principles and practice of Tontine building companies, freehold land societies, &c., and the law relating to all these, together with the statutes and cases to the present time, and also rules, forms, and precedents of freehold, copyhold, and leasehold securities, with practical notes. On a subject of such deep importance to the working classes, therefore, this cannot but be a useful little work, more especially since it appears to have been written under an impression of the defective nature of terminating societies, so many of which have been based on fallacious principles, and have led to mischief and ruin in place of benefit. Our opinion on this subject, and also on the superiority of permanent associations discreetly established and conducted has been already repeatedly given, and need not be here further entered into. We shall only add, that Mr. Stone's book, as a mere compendium, is well worthy of attentive perusal by all who are interested in such institutions. To professional men, too, as an embodiment of the law and statutes relating to them, with rules, forms, and precedents of securities, as settled by counsel, it must be very useful. We are glad to see that the value of Mr. Scratchley's work, already reviewed (vol. viii., p. 92), in which he exposes the complicated errors such societies have laboured under, is prominently acknowledged by the author.

THE MELANCHOLY MEMOIR OF TOM TEE-SQUARE.

Tom Tee-square was an office fag,
Who sigh'd while great things *planning*,—
White-faced, and seedy, and, alack!
Much giv'n to false hopes fanning.

His gov'nor, a *designing* man,
Cross-grain'd was, and close-fisted;
Who, had Tom stol'n an idea from,
Would certainly have miss'd it.

Tom was not of those happy wights
Who Italy are sent to,
To sketch, get finish'd, and return
To talk 'bout *chinky-chento*.

But oft when measuring back slums,
And making rueful faces,
He'd cause to exclaim, "Alas, *my lines*
Fall not in pleasant places."

Nor was he of your shabby sort,
Who seek to dine or lunge out;
And yet, tho' blaming such, was he
Right often known *to sponge out*.

And oft would he himself confess,
Lugubriously gaily,
That, let him do his very best,
Still all he did was *scaly*.

(Tho' Tom he had a *dog-leg'd* stare,
And 's knees were *joggle-jointed*,
And 's nose was quite fore-shorten'd, yet
His jokes were ever pointed.)

Poor Tom was hardly half full size,
So lank his *stretching frame* was:
Hard fare you would have thought his *board*,
And lean, as Pecky's fame was.

No wonder his sad hopeless heart,
The bigger got, and fuller;
For Pecky proved himself each day,
A most *unparallel'd ruler*.

Tho' once, when in his native vale,
Plump as a mill-fed rat,
Soon he a competition won,
As a study *from the flat*.

So lathy he became at length
His friends did him anoint,
As the projecting shadow, who
Was near his vanishing point.

Yet would Tom crack his joke at times,
'Mong happy chums with spouses;
And style himself high dramatist,
Since he could *draw great houses*.

He had some notions of his own,
Which might want overhauling;
As to the height of cater-pillars,
And strength of cater-walling.

At last Tom's elevation came:
Who can Old Forky's knack shun!
Nor need we e'en begrudge his claim
T' subtract Tom's dismal fraction.

TETE DE LION.

Miscellanea.

LIVERPOOL ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—At the meeting of this society on the 8th instant (Mr. Picton, president, in the chair), Mr. Deacon, of St. Helens, who was to have contributed a paper on the subject of glass-blowing, being unavoidably absent, the society devoted the evening to the discussion of various subjects. Mr. Charles Reed produced the plans and designs of a hotel, to be called the Britannia Hotel, which he has been deputed to construct in the immediate vicinity of the Menai Straits. Mr. Reed intimated that the hotel would contain 500 beds. Some notion of its extent may be judged of from the fact, that the front alone will be no less than 521 feet long. Mr. Reed, in order to gather hints for his designs, had visited the various large hotels on the continent, but habits and customs abroad were so entirely different from those in England, that his journey produced less valuable results than would at first appear. One feature in the design is its connection with the railway, to be accomplished by means of a glass avenue, *à la* Hyde-park Palace. A paper, supposed to have been written by Mr. Rickman, which had been forwarded by Mr. W. Mason, on the subject of Chester Cathedral, was read. Mr. Picton offered some remarks on the architectural remains, &c., of the Winchester, Canterbury, and Salisbury Cathedrals and of churches in the county of Kent.

THE CAPITOL AT WASHINGTON.—A reader, with reference to our note that the Capitol at Washington is about to be increased, asks what sort of building it is. The following paragraph, from the New York *Family Christian Almanac*, will serve for an answer. "The Capitol at Washington is a large and showy building, of the Corinthian order of architecture, of freestone, and painted white. It is situated in the centre of a square, on an eminence 78 feet above tide-water, and consists of a central edifice and two wings, the entire length being 352 feet, and the depth of the wings 121 feet. On the east front, there is a splendid portico of twenty-two columns, 38 feet high; and on the west front, a portico to ten columns. The height of the building, of the top of the dome, is 120 feet; and under the dome is the rotunda, 95 feet in diameter, and of the same height, adorned with sculpture and paintings of a national character. On the east front, in niches, are colossal figures, in marble, of Peace and War, and a fine marble statue of Columbus at the entrance. The colossal statue of Washington, by Greenough, stands in the east park, in a neat temple erected for the purpose. Within the building are the hall of the House of Representatives, the Senate Chamber, the library of Congress, the court-room of the Supreme Court, and some seventy rooms for the accommodation of committees, &c. &c. Around the Capitol are 22 acres of park, highly ornamented with trees, shrubbery, fountains, &c."

A BLIND ENGINEER.—The history of John Metcalf is a singular and interesting one. In a sketch of his life, lately given in an article on "The Curiosities of Eccentric Biography," in *Bentley's Miscellany*, we find the following particulars, which we think worth condensing:—He was born in 1717, at Knaresborough. At the age of six years he was seized with small-pox, which deprived him of sight. In about three years he could find his way alone to any part of Knaresborough. He became very expert in swimming, and saved the lives of some companions. As he grew older he could find his way well over the country, and carried persons through "short cuts" and fords in the river with no difficulty. Travellers, whose guide he became, were led quite safely by him, through the night, in most dangerous roads, to the point of their destination, totally unconscious of his want of vision. His most remarkable occupation was road-making. Among the numerous roads which Metcalf contracted to make was part of the Manchester road from Blackmoor to Standish-foot. The surveyor took it over deep marshes. To dig till they came to a solid bottom appeared to Metcalf extremely tedious and expensive, and liable to other disadvantages. He therefore argued the point privately with the surveyor, and ultimately got the job of its construction. Having engaged to complete nine miles in ten months, he began in six different parts, having nearly four hundred men employed. Pule and Standish Common, a deep bog, was thought impracticable. The water he carried off by drains, but found the greatest difficulty in conveying stones to the spot. Having levelled the piece to the end, he ordered his men to collect heather or ling, and bind it in round bundles. These were placed close together, and another row laid over them, upon which they were well pressed down, and covered with stone and gravel. This piece, being about half a mile in length, when completed was so remarkably good, that any person might have gone over it in winter unshod without being wet; and though other parts of the road soon wanted repairs, this needed none for twelve years.* To his road-making he added bridge-building, and constructed that at Boroughbridge with credit to himself. He continued his business of making roads and building and repairing bridges in Yorkshire, Lancashire, Derbyshire, and Cheshire, with great success, until the year 1782, when he returned to Yorkshire. He died in 1802, in his eighty-fifth year.

NEW PATENTS.—The following, amongst others, have been recently granted: To H. Grissell, of Regent's-canal Iron Works, Middlesex, engineer, and T. Redwood, of Montague-street, in same county, professor of chemistry, for improvements in coating metals with other metals,—To T. Allan, of Glasgow, ironfounder, for certain improvements in paving or covering roads, streets, and other surfaces of a similar nature,—To G. Anstey, of Brighton, gentleman, for certain improvements in consuming smoke, and in regulating the draught of chimneys,—To C. Barlow, of Chancery-lane, for improvements in machinery for the manufacture of railway chairs,—and to R. Cogan, Leicester-square, glass-merchant, for improvements in the application of plain or ornamental glass alone, or in combination with other suitable materials, to new and useful purposes of construction or manufacture.

CONTRACTS FOR STONE.—In the Sheffield County Court, on the 1st inst. (before W. Walker, Esq., Judge), an action was brought by Mr. Peter Spooner, of Hallamgate, against Messrs. Pickard and Ogden, of Bradford, the contractors of the new barracks, to recover 27*l.* 15s. 9d., as compensation for a quantity of stone got out of the quarry belonging to the plaintiff, and for the cost of erecting a fence round the quarry. It appeared that the defendants had agreed to purchase 600 yards of stone from Mr. Spooner, at 2s. 3d. per yard surface measurement, one-fourth of the money to be paid down, and the remaining three-quarters as the stone became exhausted. A regular contract to this effect was drawn up by Mr. Wake, solicitor; but the contractors having in the mean time proceeded to get stone, and finding it to be not so good in quality as they had expected, refused to sign the contract. They continued to work the quarry until they had bared nearly 250 yards. The action was brought by Mr. Spooner to recover for the number of yards of stone according to the original purchase. Mr. Fretson, who appeared for the contractors, objected that the contract was within the Statute of Frauds, and therefore could not be enforced. Mr. Dixon, for the plaintiff, urged that the case was taken out of the statute, the contractors having taken away stone. The Judge decided that the case was so taken out of the statute, but conceived that all Mr. Spooner would be able to recover would be for only so much of the stone as had been obtained by the defendants. Evidence was then gone into, and ultimately the Judge decided that the contractors should pay to the plaintiff the sum of 13*l.* 13s. for the stone, and costs of the action.

DISPUTED CONTRACT FOR TILES.—At the Birmingham County Court lately, a case (*Blakesley* v. *Glenn*) came on for trial, a second time, as to some tiles intended for the new workhouse at Birmingham-heath. The action was brought to recover the sum of 47*l.* 0s. 11d. for 33,000 brinded tiles, at the price of 27s. 3d. per 1,000, supplied by Mr. Blakesley, to Mr. Fryar, Mr. Glenn's manager. Mr. Blakesley and Mr. Glenn had entered into a written contract, by which the former agreed to supply the latter with 30,000 blue tiles, at a given price, according to sample. The plaintiff was an agent, and dealt with a Mr. Warner, tile-manufacturer, Trent Vale Works, Newcastle-under-Lyme. Mr. Blakesley admitted that one condition of this contract was, "that the tiles must be to the satisfaction of the clerk of the works." Three weeks afterwards, according to plaintiff's testimony, he saw Mr. Fryar, defendant's manager, and as the blue tiles could not be delivered so soon as they were required, a new contract was entered into between himself and Fryar (for defendant), for which brinded tiles, at 27s. 3d. per 1,000, were to be substituted, or to be furnished forthwith in lieu (for the present) of the blue tiles. It was not denied that Fryar had power to make contracts. Mr. Blakesley went on to say, that he then gave Mr. Fryar a sample of the brinded tiles, keeping a similar one himself, and that within a short time these latter articles came to the works in two boats. The evidence led as to what then took place was flatly contradictory. For plaintiff, a boatman swore that Mr. Fryar not only gave permission for landing, but said, "I'll have them: they might have been bluer; but they'll do for the back of the buildings." For the defendant it was deposed that Fryar said, "The tiles are not according to order: they will not do, nor shall they come upon the ground at all." Other witnesses, including Mr. Glenn himself, Mr. Harrison, attorney for plaintiff, and Mr. Husband, clerk of works, also gave contradictory evidence. Mr. Davis, a slater for twenty-five years, deposed on behalf of plaintiff that the tiles in dispute were equal to what were being actually used at the works, and "that there was not a blue tile on the whole building." This statement both Mr. Glenn and Mr. Husband denied. Samples of the different tiles were then shown to the jury, and the judge, in summing up, said the questions were—was there a substituted contract by Fryar in place of that made with Mr. Glenn? then, if so, were the brinded tiles sent in accordance with such substituted contract? After three-quarters of an hour's consultation, the jury came into court with a verdict for the defendant.

GAS.—A correspondent at Baldock says,—"your journal is doing much towards the enlightenment of our houses and streets: may it continue doing so. The Royston Gas Company up to last Christmas charged 10s. per 1,000 feet. They have now reduced it to 7s. with a reduction of 25 per cent. on the street lamps. Their coke sold at 38s. per ton: it now sells for 16s. A branch of the Great Northern Railway runs into the town, and supplies them with the Yorkshire coals at a reduction of about 8s. per ton on the price they usually gave."——"The corporate town of Ruthin, in Wales," says a contemporary, "has followed the example of Southport in adopting Mr. White's gas. Mr. White has contracted to light forthwith the beautiful and romantic town of Dunkeld, Perthshire, including, we believe, the Duke of Athol's palace, contiguous to it. The extensive mills of Messrs. Geo. Clarke and Sons, Pollard-street, Manchester, having 1,600 lights (many hundreds of which are burning all day), are supplied by one set of apparatus, consisting of two resin and two water retorts, placed in one small furnace, only 4 feet 3 inches of inside width, and this easily and amply supplies the whole, equal to the consumption of many a town. We have made some inquiries as to the cost of this gas, where 200 or 300 lights are required, and are informed that from one cwt. of resin, costing in Liverpool 3s. to 3s. 3d., 1,800 to 2,000 feet of gas are obtained, besides three gallons of residual oil, for which a wholesale house in Manchester will give 7d. per gallon, or 1s. 9d. for every cwt. of resin used, and pay the carriage. The price of the gas is, therefore, an easy calculation. The commissioners at Southport refuse to take 7d. per gallon, saying they can make more of it."

PUBLIC LIBRARIES AND MUSEUMS.—Although we have occasionally noted the various provisions and particulars of the Act for the Establishment of Public Libraries and Museums by Town Councils, we think the present a very fitting time to follow the example of a contemporary, the *Gateshead Observer*, in reannouncing its principal points. The statute is that of 13 & 14 Vict. cap. 65, and received the Royal assent on 14th August, 1850. It applies to all boroughs having a population exceeding ten thousand persons. As a condition precedent to its adoption, the town council must have the sanction of a majority of two-thirds of the burgesses. The votes are to be taken in the manner of a municipal election; and if the decision be adverse, the question cannot be re-opened for two years. If favourable, the town council may purchase or hire lands or buildings, and erect, extend, or alter them, for the purpose of forming libraries or museums of art and science. The requisite moneys are to be raised by a rate, but the rate must not exceed one halfpenny in the pound for each year. Money may also, with the sanction of the Treasury, be raised on mortgage of the rate. The sums raised may be applied in providing rooms, fixtures, furniture, fuel, lighting, officers, &c. The library and museum must come from other sources. The public to be admitted without charge. It is calculated, we may add, that wherever a proper building is thus provided for, there will be no difficulty in very shortly collecting, even by gifts, bequests, &c., alone, a very creditable library as well as museum.

THE SMITHFIELD NUISANCE AND ITS EXTENSION.—A special vestry was held last week in the parish of St. James, Westminster, to consider the propriety of petitioning Parliament against the Bill promoted by the corporation of London for continuing on or near the present site the cattle-market of Smithfield, Mr. Geesin, chairman. Mr. Nelson moved that a committee be appointed to prepare a petition. It might be asked, he said, what the parishioners of St. James's had to do with the question of Smithfield. They were not on the high road for cattle to the market, but when they were in the city they were liable, like others, to be inconvenienced: they were also likely to be seriously affected by a Bill, the effect of which would be to raise the present tolls 300 per cent. He contrasted the description of Smithfield in 1614, when it was a place of public amusement, with the account of it given in Mr. Cunningham's hand-book at the present time. The corporation having been, as it were, convicted of keeping a disorderly house, and ordered to suppress it, had complied with the sentence by removing next door. The contemplated lairs were for 1,000 cattle and 5,000 sheep. These, packed as closely as possible, would require two acres of space at least; whereas the extent of lairage provided for in the new plan was barely half an acre. The proposal for shutting the market when the ordinary traffic of the streets would be disturbed by it, was impracticable. The estimated expense of the new plan was 500,000*l.*, and it included the removal of 541 houses, four

* This method, and a similar one with branches of trees, or other timber, we had repeated occasion to recommend while the great railway works were in progress throughout the country, and often, after repeated failures with heavier materials, it had at length to be resorted to, and always successfully. Peat-bog, we may here also remark, is a singular preservative of timber, trees, or other vegetable matter, and doubtless this peculiar property of bogs insures the permanency of such light net-works thrown across them.